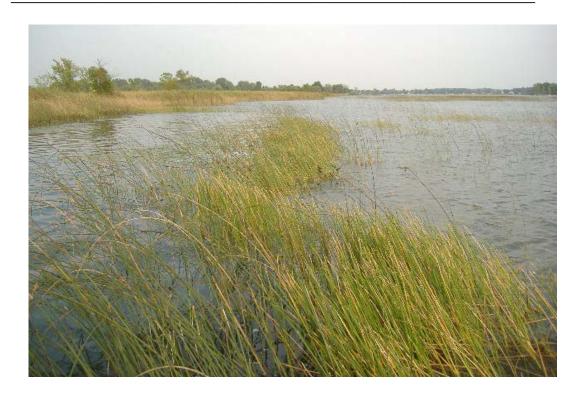


# Aquatic Enhancement & Survey, Inc.

# Lake Pleasant Aquatic Vegetation Management Plan Update, Steuben County, Indiana 2006



Prepared for:

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# **Executive Summary**

Lake Pleasant is a 417 acre oligotrophic glacial lake in Steuben County Indiana. It has a relatively small watershed of 1768 acres comprised largely of agricultural lands. The lake is ringed by a mix of riparian marshland and uplands developed with homes and cottages. Lake Pleasant has several developed excavated channels along its south edge. The lake has a unique and diverse aquatic floral community with at least 22 species of submersed aquatic plants including two rare species and one threatened species. (See the complete plant inventory below)

Common Name(s)	Scientific Name	Species Code	Nativity Native/Introduced	Indiana Status (Rare/Threatened/Endangered)
Whorled watermilfoil	Myriophyllum verticillatum	MYVE	N	Rare
Northern watermilfoil, Shortspike watermilfoil, Common watermilfoil	Myriophyllum sibiricum	MYSI	N	
Variable pondweed	Potamogeton gramineus	POGR	N	
Chara, Muskgrass, Stonewort	Chara sp.	CH?AR	N	
Flatstem pondweed	Potamogeton zosteriformis	POZO	N	
Longleaf pondweed, American pondweed	Potamogeton nodosus (formerly P. americanus)	PONO2	N	
Whitestem pondweed	Potamogeton praelongus	POPR5	N	Threatened
Eurasian watermilfoil	Myriophyllum spicatum	*MYSP2	I	
Richardson's pondweed	Potamogeton richardsonii	PORI	N	Rare
Illinois pondweed	Potamogeton illinoensis	POIL	N	
Curlyleaf pondweed	Potamogeton crispus	*POCR3	I	
Sago pondweed	Potamogeton pectinatus	POPE6	N	
Elodea, Common waterweed	Elodea canidensis	ELCA	N	
Horned pondweed	Zannichellia palustris	ZAPA	N	
Largeleaf pondweed	Potamogeton amplifolius	POAM	N	
Vallisneria, Tapegrass, Eelgrass, Wild celery	Vallisneria americana	VAAM	N	
Small pondweed	Potamogeton pusillus	POPU	N	
Leafy pondweed	Potamogeton foliosus	POFO3	N	
Coontail	Ceratophyllum demersum	CEDE	N	
Great bladderwort, Common bladderwort	Utricularia vulgaris	UTMA	N	
Floatingleaf pondweed	Potamogeton natans	PONA	N	
Water stargrass	Zosterella dubia, Heteranthera dubia	ZODU/HE DU	N	
Common Duckweed	Lemna minor	LEMI3	N	
Arrowhead (submersed)	Sagittaria sp.	SA sp.	N	
Filamentous algae	Any species	ALGA	N	
White water-cup (rigid white water buttercup), White water crowsfoot	Ranunculus longirostris (incl. R. trichophylus)	RALO2	N	
Brittle naiad	Najas minor	NAMI	I	
Common naiad, Slender naiad	Najas flexilis	NAFL	N	
Spiny naiad	Najas jiexilis Najas marina	NAMA	N	
Spiny naiau	ivajas marina	INAIVIA	1N	

#### **Table 1 Lake Pleasant plant inventory**

The lake supports a good fishery showing some of the highest growth rates for Redear sunfish in Steuben County. Lake Pleasant users have become increasingly concerned in recent years about an increase in the growth of Eurasian watermilfoil, an invasive, non-

native aquatic plant. Curlyleaf pondweed, also a potentially invasive plant, is present, but not currently causing significant problems. The excessive growth of Eurasian milfoil has caused ecological and recreational-use problems in channels, shoreline areas, and some offshore areas of the lake. To help address this issue the *Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010* (Aquatic Enhancement & Survey, Inc. 2005) has been developed though cost-share funding provided by the Indiana Department of Natural Resources Lake and River Enhancement Program (LARE) and the Lake Pleasant Cottage Association Owners, Inc. The purpose of the plan is to provide guidance to the Lake Pleasant Cottage Owners and the Indiana Department of Natural Resources for managing the lakes plant community to protect the ecological integrity and recreational and aesthetic value of the lake. The plan contains the following primary goals:

Goal 1. • Maintain a stable, diverse aquatic plant community that supports a good balance of predator and prey fish and wildlife species, good water quality and is resistant to minor habitat disturbances and invasive species.

Goal 2. • Direct efforts to preventing and/or controlling the negative impacts of aquatic invasive species.

Goal 3. • Provide reasonable public recreational access while minimizing the negative impacts on plant, fish, and wildlife resources.

This update summarizes plant management activities in 2006 and characterizes the lake's plant community and the lake-user response to management activities in 2006 under the plan. It provides a proposed course for future management that is consistent with the original plan goals. Tier I Aquatic Plant Data and milfoil location data were collected on Lake Pleasant on May 19, 20 and 23, 2006. 16 species of rooted submersed aquatic plants were noted in the Tier I survey showing good diversity. As estimated the previous season, approximately 25 surface acres of Lake Pleasant contained a significant growth of Eurasian watermilfoil. Per the lake's plant management plan 2, 4-D granular systemic aquatic herbicide was applied to these areas of the lake at the rate of 100 pounds per surface acre. The treatment was performed on June 1<sup>st</sup> during good weather conditions with a surface water temperature of 77.4 degrees Fahrenheit. treatment area totaled approximately 25 surface acres and included all the channels on the lake's south side and several offshore areas in the open lake. Larger offshore areas and many small concentrated dense offshore milfoil colonies were spot treated using GPS coordinates obtained in May when water clarity was excellent and the plants could be easily located. Post treatment Tier I and Tier II Plant Surveys were performed on August 15<sup>th</sup>. 20 species of submersed aquatic plants and one free-floating species were identified. Little Eurasian watermilfoil was found. Eurasian milfoil plants were only seen in three channels on the lake's south shore and one shoreline area (all previously treated). Dense Eurasian watermilfoil growth was limited to one narrow channel in the southeast corner of the lake and occupied less than one third of an acre. Another visit was made to the lake on September 15<sup>th</sup> to spot check offshore treatment areas in the improved fall water clarity. Despite considerable effort, not a single Eurasian watermilfoil plant was seen or collected outside the channel areas. Spot checks were

made of every treated milfoil colony and offshore treatment area using visual checks, sonar, and rake tosses but no milfoil was found. Milfoil plants collected in Redwater Lake in 2006, a basin connected to the northwest corner of the lake, were initially thought to be Eurasian watermilfoil but were identified by botanists at Purdue University North Central as the native milfoils Whorled watermilfoil Myriophyllum verticillatum and Northern watermilfoil *Myriophyllum sibiricum*. Lake Pleasant's native plant community did well in 2006 when compared with many other Indiana lakes but statistically was down in diversity slightly in comparison with the 2005 season. Much of this may be due to a slight change in LARE sampling protocols, but some of the change appears to be due to a slight decrease in late season water clarity. pondweeds were still fairly abundant in the treatment areas with Illinois pondweed and Richardson's pondweed commonly replacing treated Eurasian watermilfoil but Spiny naiad also became abundant in an offshore plantbed that was treated for Eurasian watermilfoil. This was the first time this plant appeared to be dominant in this area. Based on the survey data this plant appears to be a light scavenger, perhaps having taken advantage of slightly reduced water clarity in the 2006 season (seven foot August Secchi depth versus 11.3 feet in 2005) to colonize areas that previously were dominated by other Spiny naiad did not compete well with other plants within the 0-5.9 foot contours, occurring at only 5.88% of sites. Between the 6 and 10.9 foot contours where diversity and plant growth is very vigorous on Lake Pleasant it became more prominent being found at 44.44% of sites, but was still overshadowed by Illinois pondweed (55.56%) and rivaled by Common naiad (also 44.44%). Between the 11 and 15.9 foot contour it was most abundant (except for Chara) occurring at 35.29 percent of sites. Plants like Vallisneria, and Illinois pondweed may have born the brunt of turbidity induced growth reduction with a low-meadow type of plant such as Spiny naiad taking advantage of their absence and increasing its growth.. Because it does not compete well at the shallower depths and grows in primarily a low-meadow configuration it did not present a problem for residents in swimming or boating areas. Lake Pleasant probably has the seed bank present in the hydrosoil to rebound repeatedly, displaying excellent growth of important native species in seasons of good water clarity, but if water quality is not protected this ability could no doubt diminish. This accentuates the fact that good water clarity is closely linked to diversity and habitat and stresses that nutrient and turbidity management will always be part of the lake's aquatic plant management. Myriophyllum verticillatum, a native milfoil common in and around the channels on the lake's south side was largely eliminated for the season in the treatment areas along with the Eurasian watermilfoil. This plant was a non-target species of concern although it does occasionally grow to nuisance levels in Lake Pleasant's channels. The confirmation of the presence of this plant in Redwater Lake indicates that a refuge exists for it as long as the spread of Eurasian watermilfoil (and the subsequent need for treatment) to Redwater Lake is prevented. Based on excellent treatment results in 2006 the Lake Pleasant Cottage Owners Association, Inc. should repeat the use of 2,4-D granular in affected areas in 2007. With near-complete control in 2006 it is unlikely that the acreage of dense Eurasian milfoil growth in Lake Pleasant will exceed 25 acres in 2007. It is possible regrowth in treatment areas in future seasons may exceed that noted in 2006 so a possible re-treatment should be planned pending results of the 2007 post treatment surveys. Because dramatic treatment results were noted in 2006, the prospects for containing Eurasian watermilfoil problems and protecting the recreational

and ecological integrity of Lake Pleasant are good but it will not be known whether the excellent treatment results in 2006 will decrease colonization overall until the 2007 season surveys begin. Eurasian milfoil sometimes returns in a similar pattern of colonization after localized systemic herbicide treatments. Because very little Eurasian watermilfoil was left in Lake Pleasant at the end of the 2006, extensive 2007 season returning growth in treated areas would presumably be due to intact subsurface root structures that survived the treatment. To avoid the possible development of resistance to treatment a switch to another granular systemic herbicide in alternate years may be advisable if such a product should achieve EPA licensing, become available to the aquatic market, and prove efficacious.

#### 1.0 Introduction

Lake Pleasant has been treated for nuisance aquatic plants for several years. Prior to 2004 treatments were limited to the excavated channels on the lake's south shore and associated dredged shorelines near the channel mouths. These treatments targeted both nuisance growths of native aquatic plants and the exotic invasive plant Eurasian watermilfoil. Treatments also targeted the exotic plant Curlyleaf pondweed in some channel areas. Residents began to notice more Eurasian milfoil growing in offshore areas of the open lake and began to treat these areas in 2004. In 2005 the LARE program began to help the Lake Pleasant Cottage Owners develop and implement a comprehensive lake-wide program to asses and combat the increasing Eurasian watermilfoil problem with a 25 acre systemic (2,4-D) treatment including all affected areas. The table below outlines Lake Pleasant's plant management history since 2004.

Year Action Action	Action	Funding	Results
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	Taken	Taken	Taken	Source	
7/2004	Basic Plant Survey	Appr. 7 Acres of channels treated for Eurasian watermilfoil and native plants (contact and systemic herbicides) 7/04	8 acres of offshore lake areas treated for Eurasian watermilfoil (Reward contact herbicide)	LPCOA and Manapogo Park Campground and Marina	Very good MYSP control. Rebound by native pondweeds in treatment areas
7/2005	Tier I and Tier II Surveys and Plant Plan Development	Appr. 7 Acres of channels treated for Eurasian watermilfoil and native plants, (Reward contact herbicide) 7/05	11 acres of offshore lake areas treated for Eurasian watermilfoil (Reward contact herbicide)	LPCOA and Manapogo Park Campground and Marina (treatment)  LPCOA and LARE (plant development)	Extensive regrowth in many MYSP treatment areas
2006	Tier I and Tier II Surveys and Plant Plan update	Appr. 11 Acres of channels and shoreline areas treated for Eurasian watermilfoil (2,4-D granular) 6/1/06	14 acres of offshore lake areas treated for Eurasian watermilfoil (2,4-D granular)	LPCOA and LARE	Excellent results in MYSP treatment areas  .3 acres of re-growth in SE channel

Table 2 Lake Pleasants recent plant management history

#### 2.0 Watershed and Lake Characteristics

There have been no significant changes in the current year.

See Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010 (Aquatic Enhancement 2006)

#### 3.0 Lake Uses

There have been no significant changes in the current year.

See Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010 (Aquatic Enhancement 2006)

# 4.0 Fisheries

There have been no significant changes in the current year.

See Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010 (Aquatic Enhancement 2006)

#### **5.0 Problem Statement**

There have been no significant changes in the current year.

See Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010 (Aquatic Enhancement 2006)

#### 6.0 Vegetation Management Goals and Objectives

There have been no significant changes in the current year. See Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010 (Aquatic Enhancement 2006)

# 7.0 Plant Management History, 2006 Season Management Actions

Eurasian watermilfoil was targeted for treatment on a lake-wide basis on Lake Pleasant in 2006. Patterns of colonization of this invasive plant vary, but often Eurasian watermilfoil forms dense colonies nearly exclude the growth of other plants by forming light-blocking overgrowth early in the season before native plant propogules spring into action. Prior to the year 2000 Eurasian milfoil was not prominent outside the channels and associated dredged shoreline areas on the lake's south side. In the past five years dense colonies have started to pop up in several offshore areas of the open lake. Lake Pleasant like all lakes has its plant community shaped largely by the distribution of soil particle sizes and organic matter in its sediments with sorting occurring by wind and boat-wake driven water movement. Relatively light organic materials and fine fertile silts are continually re-suspended and exported from shallow open-lake areas by the action of the waves, eventually settling out in the tranquility of deeper waters, channels, and protected backwater areas such as Redwater Lake. Channels are prime candidates for supporting plant growth as they collect organic fertility from vegetation along their extensive riparian interface and also receive nutrient input from lawns, leaf litter, and septic sources. The secondary colonization has occurred in shoreline areas that have been artificially deepened through dredging to allow for better navigation. When most of Lake Pleasant's channels were dredged, adjacent shoreline areas were also deepened. Being close to shore they area exposed to many of the same nutrient/sediment sources as the channels, while being slightly deeper and less prone to the export of these materials by water movement. As a consequence they offer settling points for fertility. Finally, offshore areas of the open lake that offer enough depth to settle suspended fertile particulates, yet are shallow enough to provide sufficient amounts of ambient light at the hydrosoil were colonized. This third tier of colonization began occurring on Lake Pleasant to a noticeable extent within the last five years. Plant fragments originating from the lakes channels and dredged shorelines are probably transported by boats and wind, settling out in these fertile offshore areas of the large littoral shelf at the east end of the lake and a smaller fertile littoral shelf near the west end of the lake. Along areas of sharp contour breaks colonies have also formed along the weedline. Areas of offshore colonization are most commonly located between the five and ten foot depth contour on Lake Pleasant. Unfortunately these are the same areas colonized by beneficial native species so damage to the native plant community can be expected as the process continues. To stem or reverse this process 25 acres of dense Eurasian watermilfoil growth were located, GPS marked and treated in 2006 with Navigate® granular 2, 4-D. Whereas 2, 4-D shows a highly selective toxicity for broadleaf plants, the class of plants to which Eurasian watermilfoil belongs, damage to most native plants is minimal or negligible. Because channels and infested shoreline areas are probably the primary source of infecting plant fragments on Lake Pleasant, any of these areas with even a

minimal colonization by Eurasian watermilfoil was treated completely. To maximize offshore treatment efficacy small dense colonies, separated from other milfoil plants by considerable distances were marked and spot treated separately. They are denoted by a "+" on the treatment/milfoil map below (figure 1). Small colonies located in clusters or larger areas of colonization in the open lake were treated with broader treatments to insure complete coverage.

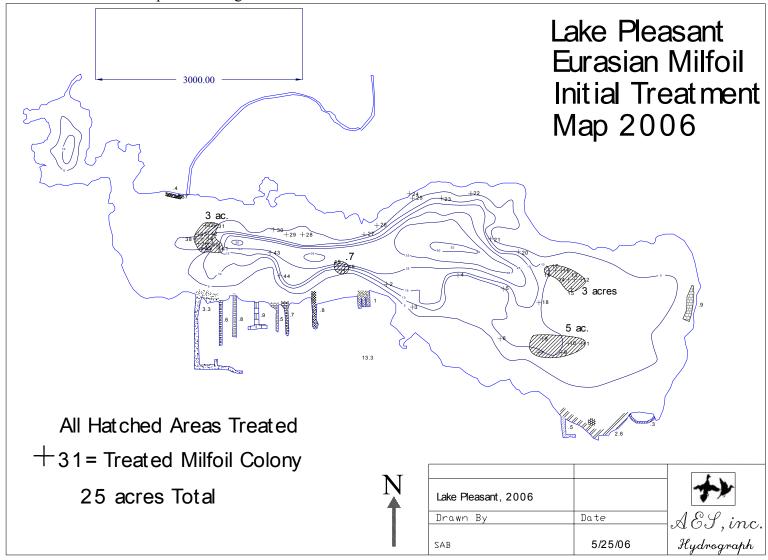


Fig. 1 Areas of significant Eurasian watermilfoil colonization and treatment in 2006

Treatment in 2006 was carried out on June 1<sup>st</sup>. Lake Pleasant's water temperature at that time was 77.4 degrees (F). The air temperature was 75 degrees (F) with a light west wind. A seeder spreader mounted on the back of a 16 foot skiff was used to apply the 2, 4-D product. It is likely that the Eurasian watermilfoil plants dropped out of the water column within three weeks. Post treatment Tier I and Tier II surveys performed in August and spot checks performed in September (under better fall water clarity) showed very little Eurasian watermilfoil re-growth in Lake Pleasant. Under the Tier I

survey protocol conducted in May, 25 distinct plantbeds were designated in Lake Pleasant. Eurasian watermilfoil was observed in 18 of the 25. It was assigned a visual abundance rating of greater than 2 (scale of one to four) in eight of those plantbeds (figure 2).

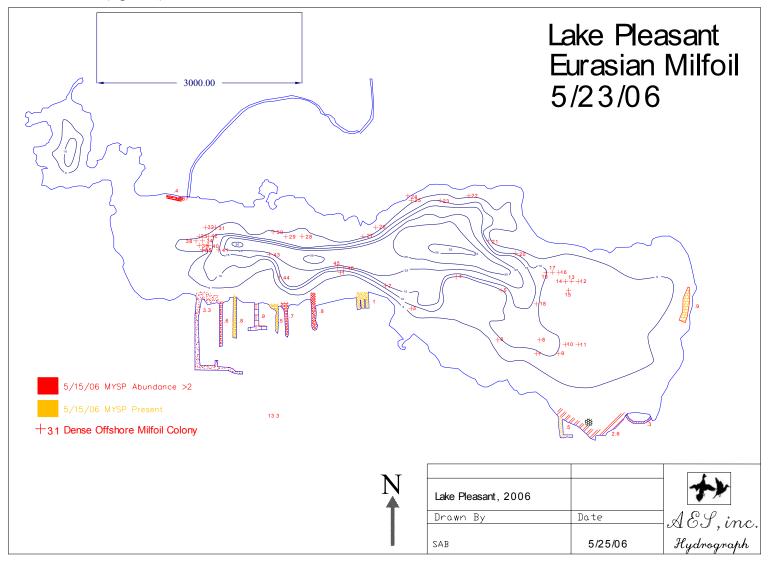


Fig. 2 Eurasian watermilfoil map for Lake Pleasant 5/15/06

During the post-treatment Tier I survey performed in August of 2006 28 separate plantbeds were designated. Eurasian watermilfoil was noted in only four and was assigned a visual abundance rating of over 2 in only one plantbed of .3 acres in size (figure 3). During Tier II plant sampling on August 18, 80 random stratified plant-rake tosses in Lake Pleasant failed to produce even a single Eurasian milfoil plant. Curlyleaf pondweed, also an exotic invasive aquatic plant was present in several plantbeds in Lake Pleasant, but did not appear to pose a significant threat to the ecology or recreational viability of Lake Pleasant in 2006. Spiny naiad native species became more prominent in 2006 than in past seasons and may be a plant to watch in the coming season.

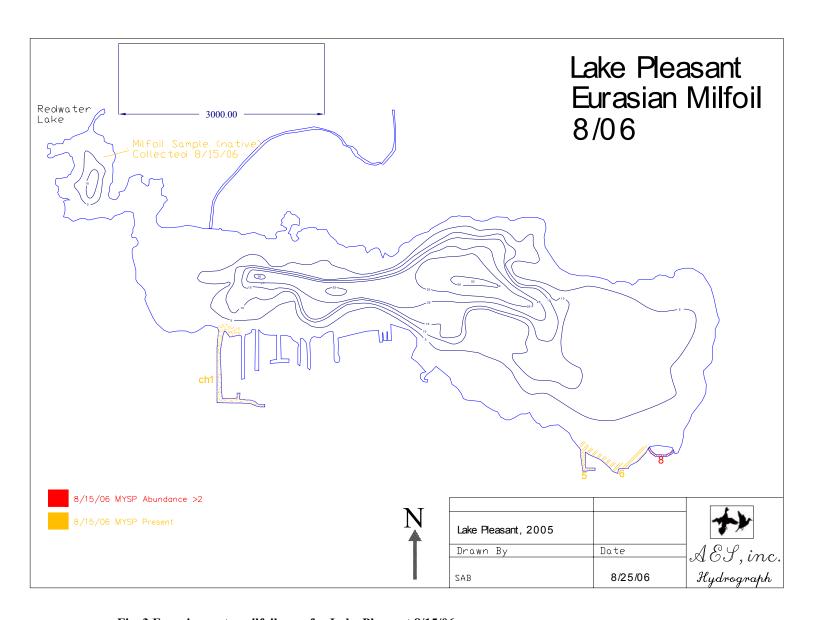


Fig. 3 Eurasian watermilfoil map for Lake Pleasant 8/15/06

#### 8.0 Aquatic Plant Community Characterization

#### 8.1 Methods

Plant sampling in 2006 included Tier I surveys on 5/15/06 and 8/15/07 utilizing the same sampling protocol as in the original Plant Management Plan. For details see: *Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana 2006-2010* (Aquatic Enhancement 2006) A single Tier II survey was performed on 8/15/06. The tier II protocol was modified over the original protocol used in the Plant Management Plan by redesignating rake-toss sampling effort according to lake trophic status (oligotrophic) combined with lake size (417 acres) rather than lake size alone. In addition sampling was performed in a depth-stratified manner with a specified number of samples collected in depth contour categories according to the following table:

		Hypere	utrophic	1	Eutrophic	2		Mesot	rophic		Oligotrophic						
Lake	Total # of Sites	0-5 foot contour	5-10 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	0-5 foot contour	5-10 foot contour	10-15 foot contour	15-20 foot contour	20-25 foot contour		
<10	20	10	10	10	7	3	10	5	3	2	10	4	3	2	1		
10-49	30	20	10	10	10	10	10	10	7	3	10	10	5	3	2		
50-99	40	30	10	17	13	10	10	10	10	10	10	10	10	7	3		
100-199	50	40	10	23	17	10	14	14	12	10	10	10	10	10	10		
200-299	60	50	10	30	20	10	18	16	16	10	14	12	12	12	10		
300-399	70	60	10	37	23	10	22	20	18	10	17	15	14	14	10		
400-499	80	70	10	43	27	10	25	23	22	10	19	18	17	16	10		
500-799	90	80	10	50	30	10	29	27	24	10	22	21	19	18	10		
>=800	100	90	10	57	33	10	33	31	26	10	25	23	22	20	10		

Table 3 Tier II Sample size requirements as determined by lake size, trophic state, and apportioned by depth class (source IDNR)

#### 8.2 Results

#### 8.2.1 Tier I

During the May 15<sup>th</sup> Tier I survey 25 areas of Lake Pleasant's littoral zone were designated as Plantbeds based on their homogeneity of biological and physical characteristics (see figure 4 below). Collected data for each plantbed is assembled in tables 11 and 12 below. A short description of each plantbed follows.

**Plantbed 1-** Plantbed one is a .82 acre area including an excavated channel at Manapogo Park Campground and the attached dredged lakeshore area outside the channel. This area is located on the lake's south side. The lake's primary access point is located at the south end of this channel. A paved ramp here allows campers, lake residents, and area boaters and fisherman to access the lake for a fee. This channel experiences more problems with the growth of Eurasian watermilfoil than any other on Lake Pleasant and is likely the point of initial introduction and colonization of this plant. The combination of the boat launch and the milfoil problem also make this channel likely to be one of the primary providers of Eurasian milfoil fragments to other areas of the lake. This makes control in this area important. The substrate of this bed is sand with silt. Six species of submersed aquatic plant were noted in plantbed 1 during the early season survey. This plantbed was dominated by Eurasian watermilfoil and Curlyleaf pondweed in May. An understory of Chara is also present. Little Eurasian milfoil grows past the channel's mouth. Richardson's pondweed is present near and just outside the channels mouth every season. During the post treatment Tier I survey in August this plantbed was redesignated to only include the channel portion (the rest was designated 2a). At that time no Eurasian watermilfoil was found in plantbed A due to the 2006 season treatment. Four species of native plants were noted with Sago pondweed, Coontail, and Slender naiad sharing dominance.

**Plantbed 2A-** This plantbed is the dredged area immediately outside plantbed one and was only designated as a separate plantbed during the late season survey. This plantbed is .35 acres in size and has a substrate of sand with silt. Five species of native submersed aquatic plants were noted in 2A during the late-season tier I survey with

Illinois pondweed and Richardson's pondweed sharing dominance. Spiny naiad was also present.

**Plantbed 1A-** This plantbed was designated as a separate plantbed only in the late season survey. During the early season survey it was part of plantbed ch6. Plantbed 1A is a .30 acre dredged shoreline area with lakeside homes and docking areas. It's fertile substrate is silt with sand. Four species of native submersed aquatic plants were noted in 1A during the late-season survey with Illinois pondweed being dominant. No Eurasian watermilfoil was noted in this area.

**Plantbed 2-** Plantbed two has an area of three acres and incorporates the swimming, docking, and marina areas at Monopogo Park. Much of this area has been dredged for navigation. The bottom is sand with silt and shows intermediate fertility. Four species of submersed aquatic plants were observed during the May survey. Some Eurasian watermilfoil grows in this area, but Chara is dominant and native pondweeds are also present. During the late-season survey Eurasian milfoil had become absent and six species of beneficial native plants were noted. Dominance was shared by Chara, Variable pondweed, and Illinois pondweed.

**Plantbed 3-** Plantbed three represents the area in the west three quarters of Lake Pleasant between the eight and ten foot contour. It is approximately 47 acres in size. Six species of submersed aquatic plant were noted in this plantbed in the May survey. The substrate is silt with sand and appears to be moderately to highly fertile. Many of Lake Pleasant's small milfoil colonies have appeared in this area. Along contour breaks tall stands of aquatic plants are present in this plantbed, but overall this plantbed is dominated by Chara. The wide flat area at the western end of this plantbed contains mostly low meadow Chara but is spotted with growths of taller plants. During the lateseason survey four species of native submersed plant were noted. Eurasian milfoil was not seen. Chara was abundant and dominant.

**Plantbed 4-** Plantbed four is approximately 17 acres in size and represents the bottom area beyond plantbed three between the 13 and 18 foot contour. The substrate is silt with sand. Only Chara was noted growing in this plantbed in the May survey, but it was very abundant (over 60%). During the late season survey Chara was again noted but at a lesser abundance in the cloudier waters of the late season. Slender naiad was also noted.

**Plantbed 5-** Plantbed five is approximately one half acres in size. It is an "L" shaped excavated channel located in the southeast portion of the lake. It contains lakeside homes near its end. Its substrate is silt with sand and is very fertile containing much organic matter, especially at the channels terminal end where it catches leaf-fall. Five species of submersed aquatic plants and filamentous algae were noted growing in this plantbed during the May survey. This channels plant community is dominated by Whorled watermilfoil *Myriophyllum verticillatum*. Seven species of native plants were noted in the late season survey with Chara being dominant. Eurasian watermilfoil was noted at a low abundance due to the treatment. Whorled water milfoil was absent as a non-target effect of the treatment.

**Plantbed 6-** Plantbed six is 2.56 acres in size and represents an area of dredged shoreline in the Southeast corner of the lake and a short connected excavated cove. Much of its shoreline is developed with homes and cottages. Its substrate is silt with sand and rich in organic matter. Seven species of submersed aquatic plants were noted in this area during the May survey. This plantbed was dominated by Eurasian watermilfoil in the pre-treatment period. Use of this area is significantly impaired by this Eurasian milfoil growth. During the late season survey it was present in this area at a very low density. Six beneficial native submersed aquatic plant species were present with Chara being dominant.

**Plantbed 7-** Plantbed seven is a .25 acre Spadderdock (Yellow water-lily) patch. During the 2006 early season Tier I survey no submersed plants were present in this plantbed. Only a sparse growth of Chara was present during the late-season Tier I survey.

**Plantbed 8-** Is a small excavated loop channel in the extreme southeast corner of Lake Pleasant. It is .27 acres in size. Its substrate is very fertile silt with sand. A high amount of organic material is present. Four species of submersed plants were present during the May Tier I survey with Eurasian watermilfoil being dominant. A significant amount of Whorled watermilfoil was also present. During the late season survey ten species of submersed plant were noted. Both Eurasian and native milfoil enjoyed significant regrowth here in the 2006 season. This channel was the only treated area to display a significant milfoil regrowth. Despite this, Slender naiad was the dominant plant during the late-season survey.

**Plantbed 8.5-** This plantbed is a broad 7.2 acre area of luxuriant plant growth. Growth seems to occur rapidly in this area with visual abundance of various species changing rapidly in response to treatment or the progression of the growing season. The substrate of this plantbed is silt with sand. Marl is present. Four plant species were noted during the May Tier I survey including Whitestem and Richardson's pondweeds. Eurasian watermilfoil was dominant. In the late-season five species were noted. In past seasons native pondweeds had become dominant in the post-treatment period, but in 2006 Spiny naiad had become dominant with an abundance rating of 4 (greater than 60%).

**Plantbed 9-** Plantbed nine encompasses the area of the east three-quarters of Lake Pleasant between the 4.5 and eight foot depth contour (excluding plantbed 8.5). Most of the substrate in plantbed nine is relatively infertile silt with sand on a broad flat. Plant growth is relatively sparse above the six foot contour and on broad-flat areas, with some more substantial plant growth supported along drop-offs. Two native plant species were noted in plantbed nine in the early season survey with five noted during the August survey. No non-native species were seen. Chara was dominant in the early season with Illinois pondweed being most dominant in August.

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- **Plantbed 10-** Plantbed 10 is a slight depression with increased fertility over the surrounding sparse flat. It is .85 acres in size with a sand-with-silt substrate. It was designated as a separate plantbed during the May survey but was not considered worthy of designation as a separate plantbed during the late season survey due to similarity to the surrounding plantbed (11). Six species of submersed plants were present during the May survey including Eurasian watermilfoil. This plantbed was part of the 2006 treatment. No milfoil was seen during post-treatment spot checks in August and September.
- **Plantbed 11-** Plantbed 11 is 98.39 acres in size and encompasses nearly all of Lake Pleasant's shallows shoreward of the 4.5 foot depth contour on the lake's main basin. The sand-with-silt substrate is relatively infertile in most areas and plant growth is relatively sparse. Marl is present in most areas. Only Chara and Illinois pondweed were noted in plantbed 11 during both the May and August surveys.
- **Plantbed 12-** This plantbed is a marshy 8.94 acre basin off of the northwest corner of Lake Pleasant. Much of this area is overshadowed by a canopy of White water lilies. A central basin and channel is kept open, presumably by the passage of boats moving through this area into Redwater Lake. The substrate is silt-with-sand, very dark and high in organic material. Despite this the growth of submersed plants is relatively sparse in this area. Only Illinois pondweed was noted in the May survey. During August five species of native submersed plant were present. This was the only location in Lake Pleasant where Floatingleaf pondweed Potamogeton natans was seen.
- **Plantbed 13-** This plantbed is Redwater Lake, a distinct 13 acre basin located off of the northwest corner of the lake. The substrate in this basin is rich dark silt-with-sand. The basin is ringed by emergent plantbeds and its waters are dark and acid stained. During the May Tier I survey three species of submersed native plants and Curlyleaf pondweed were noted in Redwater Lake. During the August survey six native species were seen. This is the only location outside the Lake Pleasant channels where native milfoil was seen. No Eurasian watermilfoil was found in Redwater Lake although it is probably highly prone to colonization.
- **Plantbed 14-** Plantbed 14 is a small (.3 acre) area of dredged shoreline near Lake Pleasant's outlet in the northwest corner. As a settling area for organic materials its substrate is composed of rich silt-with-sand. During the May Tier I survey six species of submersed aquatic plant were noted in this area including Eurasian watermilfoil. During the August survey three native species were seen with Chara being dominant. Eurasian watermilfoil was absent.
- **Plantbed 15-** Plantbed 15 was designated only in the late-season Tier I survey. In the May survey it was part of plantbed nine. It represents 3.14 acres between the 4.5 and eight foot contour in the northwest portion of the lake. The substrate in this area is silt with sand. Three species of native plant were noted in this area during August with Chara being dominant.

**Plantbed 16-** Plantbed 16 also was designated as a separate plantbed in the early season only. It was part of plantbed nine in the early-season Tier I. Its represents 3.34 acres between the 4.5 and eight foot contour on the southwest part of the central Lake Pleasant basin. Its substrate is sand with silt. Three species of submersed aquatic plants were present in August with Chara being dominant.

**Plantbed 17-** Plantbed 17 represents a 5.9 acre fertile silt-with-sand bottomed area that supports luxuriant plant growth. Five species of submersed aquatic plant were noted during the May Tier I survey including Eurasian watermilfoil. This has been one of the larger areas of dense milfoil colonization in the open lake. Six species of submersed aquatic plant were noted in plantbed 17 in August. Eurasian watermilfoil was not found. Illinois pondweed and Chara shared dominance.

**Plantbed 18-** Plantbed 18 is located between the eight and 13 foot contour at the lake's west end. It is 6.93 acres in size. The substrate is primarily silt-with-sand. Marl is present. Four species of submersed rooted aquatic plant were present during the May Tier I survey including Eurasian watermilfoil. Chara was dominant. During the August survey four species were noted. Eurasian watermilfoil was not seen.

**Plantbed 19-** This plantbed lies just inside plantbed 18 between the 13 and 18 foot contour. It is 3.97 acres in size and its substrate is silt-with-sand. Four species were noted during the May Tier I survey including Eurasian watermilfoil. Only Chara was noted in August.

**Plantbed 20-** Plantbed 20 is 15.82 acres in size and represents the whole of Lake Pleasant's bottom area between the 18 and 26 foot depth contours. The substrate is fertile silt-with-sand with marl present. Plant growth is limited at this depth by the availability of light. During the May Tier I survey only Chara was present. During the August survey Spiny naiad and Vallisneria were also found in Plantbed 20.

**Plantbed ch1-** Plantbed ch-one includes Lake Pleasant's largest excavated channel and an adjacent emergent wetland and is 8.5 acres in size. Its substrate is fertile silt with sand. A high amount of organic material is present and the waters in this area are slightly acid-stained. Nine species of submersed aquatic plants and filamentous algae were noted in May. Eurasian watermilfoil and an excessive growth of native plants causes impairment in this channel area at times. Eurasian milfoil growth was dense in the upper tier of this channel. Curlyleaf pondweed growth was also relatively dense in portions of this channel. In August the number of species of submersed aquatic plants noted had increased to 11. Eurasian watermilfoil was noted but was not abundant. Native milfoil had disappeared in response to treatment.

**Plantbed ch2-** This plantbed is a .63 acre channel. Its substrate is silt-with-sand. This channel contains a private boat ramp maintained by a Boat Dealer/Marine store. Nine species of submersed aquatic plants were noted in this channel in May. Eurasian watermilfoil was dominant. During the August survey only three species were seen. Eurasian watermilfoil was not present.

**Plantbed ch3**- Plantbed ch3 is a .77 acre excavated channel with a sand-with-silt substrate. Nine species of submersed aquatic plant were noted in the May Tier I survey including Eurasian and Native milfoil. Only Chara and Illinois pondweed were noted in the August survey.

**Plantbed ch4-** Plantbed ch4 is a "T" shaped .88 acre excavated channel. Its bottom is sand with silt. Six species of submersed aquatic plant and filamentous algae were noted in this channel during the May Tier I survey, including Eurasian watermilfoil. Three submersed species were present in August. No Eurasian milfoil was seen.

**Plantbed ch5-** Plantbed ch5 is a .46 acre excavated channel. Its substrate is sandwith-silt. Six species of submersed aquatic plant and filamentous algae were noted in this channel during the May Tier I survey, including Eurasian watermilfoil. Only Chara, Bladderwort, and Duckweed were present in August.

**Plantbed ch6**- Plantbed ch6 is a .65 acre excavated channel. Its substrate is sand with silt. In the May survey this plantbed also encompassed the August plantbed 1A. During the May Tier I survey four species of submersed aquatic plant were noted in this channel including Eurasian watermilfoil. During the August survey seven species were noted. Eurasian watermilfoil was not present.

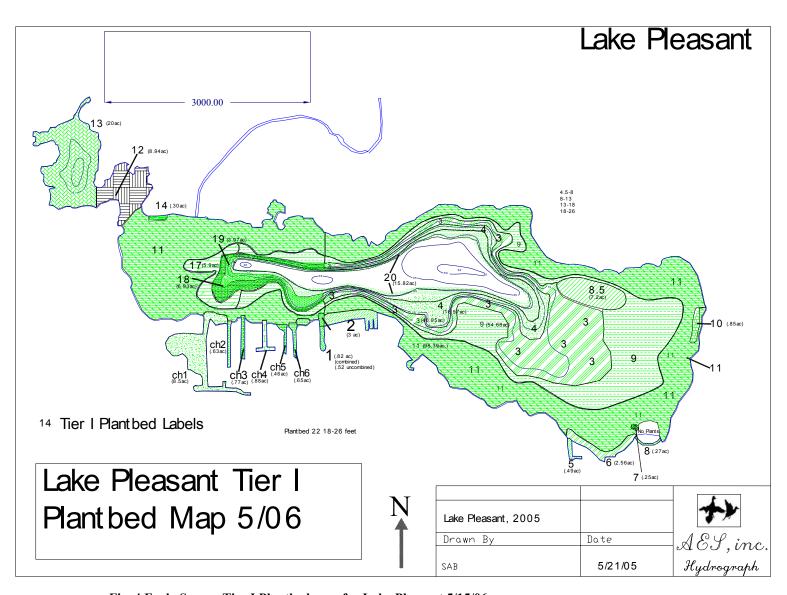


Fig. 4 Early Season Tier I Plantbed map for Lake Pleasant 5/15/06

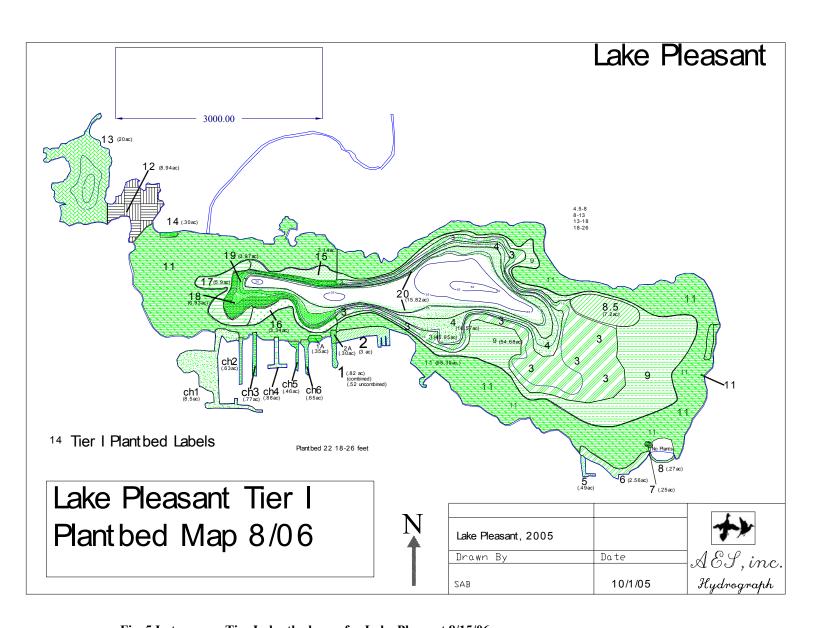


Fig. 5 Late season Tier I plantbed map for Lake Pleasant 8/15/06

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Plantbed	1	2	3	4	5	6	7	8	8.5	9	10	11	12	13	14	17	18	19	20	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6
Acres	0.82	3	46.95	16.57	0.49	2.56	0.25	0.27	7.2	54.68	0.85	98.39	8.94	20	0.3	5.9	6.93	3.97	15.82	8.5	0.63	0.77	0.88	0.46	0.65
marl	0	0	0	0	0	0	0	0	1	1	0	1	0	0	0	0	1	0	1	0	0	0	0	0	0
organic	0	0	0	0	1	1	0	1	0	0	0	0	1	1	0	0	0	0	0	1	1	0	0	0	0
CHAR	2	3	4	4		2		2	2	3	2	1			2	2	3	3	3	2	2	4	2	3	2
MYSP2	3	2	2		2	3		3	3		2				3	2	2	1		3	3	2	3	2	3
MYVE					3			2							2					2	2	2	2	2	
MYSI														1											
POIL		2	2		1	2		2		2	2	1	2	2	3	2	2				1	1		2	
POCR3	3	2	2			2		1						2		2	2	2		3	2	2	1		2
ALGA	1					1								2						3		1	3	3	
PORI	2								2		2									1	1	2			
POPR			2						2																
UTMA			1			2				1				1	2					2					
POPE6					2	2		2			2									2	2	2	3	3	1
POAM					2										2					2					
POZO						2																			
POGR											1					2				2	2	2			
POPU	1																								
ELCA								2																	
ZAPA																					2				

Table 4 May Tier I survey data for Lake Pleasant, 2006

									I								I											
Plantbed	1	1A	2	2A	3	4	5	6	7	8	8.5	9	11	12	13	14	15	16	17	18	19	20	Ch1	Ch2	Ch3	Ch4	Ch5	Ch6
Acres	0.82	0.35	3	0.3	46.95	16.57	0.49	2.56	0.25	0.27	7.2	54.68	98.39	8.94	20	0.3	3.14	3.34	5.9	6.93	3.97	15.82	8.5	0.63	0.77	0.88	0.46	0.65
marl	0	0	0	0	0	0	0	0	0	0	1	1	1	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0
organic	0	0	0	0	0	0	1	1	0	1	0	0	0	1	1	0	0	0	0	0	0	0	1	1	0	0	0	0
CHAR		2	3	3	4	2	3	3	1	2	1		1		3	4	3	3	3	3	2	2	3	2	3	3	4	
MYSP2							1	1		3													1					
MYVE										2					1													
MYSI															1													
POIL		3	3	3	2		2	2		2	3	3	1	3	3	2		2	3	2			3		2		Ш	3
POCR3																											Ш	
ALGA															1								1					
PORI			2	3	1						3	1																1
POPR																			1									
UTMA								2		2				1	3								2				1	
POPE6	3	2	2	2			2	2		3				1					1				2					2
POAM																							3					
POZO										2													2					
POGR			3				2	2		2				2			2						3					2
POPU																								1				1
ELCA										1																		
ZAPA																												
CEDE	3																											
VAAM2	2	1	2	2	2		1	2			2	2							1			1	1	2		2		1
NAFL	3					1	2			4		2				2	2	2		2			3			4		3
NAMA				2							4								2	2		1						
HEDU str							2					2																
PONA														2														
Lemna sp																											1	

Table 5 August Tier I survey data for Lake Pleasant, 2006

Descriptor	Early Season 6/30/05	Late Season 8/30/05	Late Season 8/15/06	range for 21 other Indiana lakes (Pearson 2004)	mean for 21 other Indiana lakes (Pearson 2004)
# Sampling sites	81	77	79		
Total number of species	16	16	10	1 to 17	8
Total number of native species	14	13	9	1 to 16	7
Mean number of species per site	2.26	2.44	1.8	.38 to 2.66	1.61
Species diversity index (SDI), 0-1 scale,	0.82	0.85	.75	0.0 to .91	0.66
Aquatic Vegetation % Frequency of Occurrence	97.53	100.00	86.08	n/d	n/d

Table 6 Tier II Plant Community Descriptors for Lake Pleasant 2005/2006

## **8.2.2** Tier II

Tier II plant sampling was conducted on August 15, 2006. Rake tosses were performed at 79 random stratified sampling sites per INDR Tier II Protocol. (IDNR 2006) Sampling site coordinates were recorded on a WAAS enabled hand-held GPS unit, converted to Autocad® coordinates, and mapped on a contour map of Lake Pleasant. (Figure 6) Basic statistical plant community descriptors for the three Tier II surveys performed on Lake Pleasant in 2005 and 2006 are listed in the table above. (Table 13) These descriptors were calculated based on the descriptor set from (Pearson 2004). For comparison, the range and mean of descriptors from a set of 21 other Indiana lakes (Pearson 2004) are listed in the table. Maps showing rake scores and collection locations for the three most abundant species; Slender naiad, Illinois pondweed, and Chara are also provided. (Figures 7, 8, and 9 respectively)

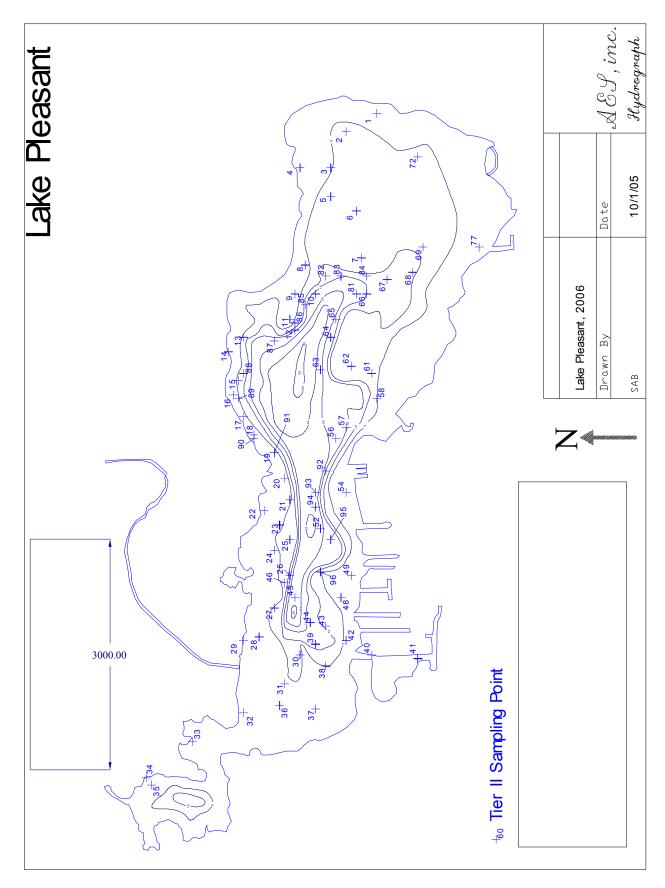


Fig. 6 Tier II sampling sites 8/15/06

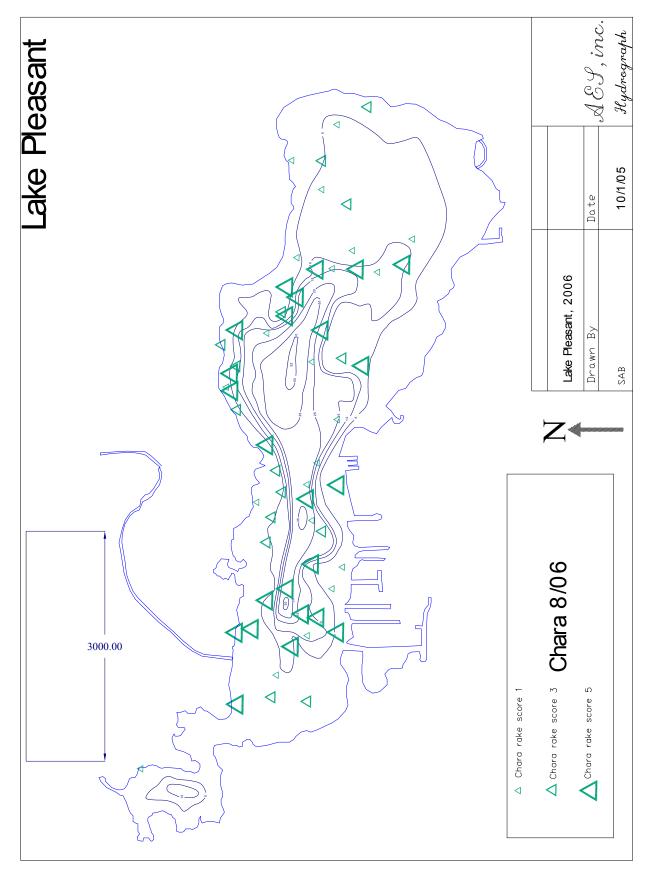


Fig. 7 Chara Map for Lake Pleasant 8/15/06

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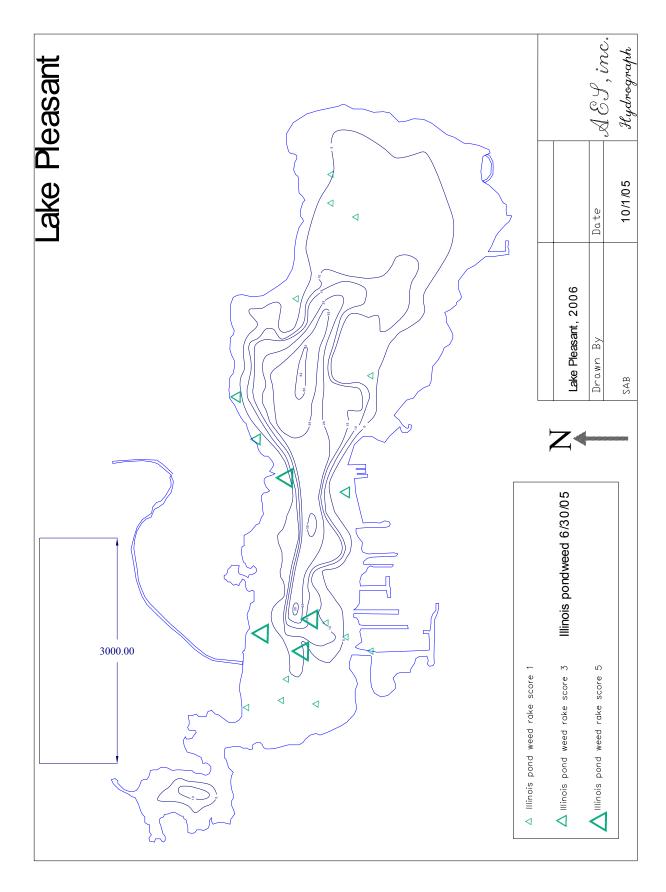


Fig. 8 Illinois pondweed map for Lake Pleasant 8/15/06

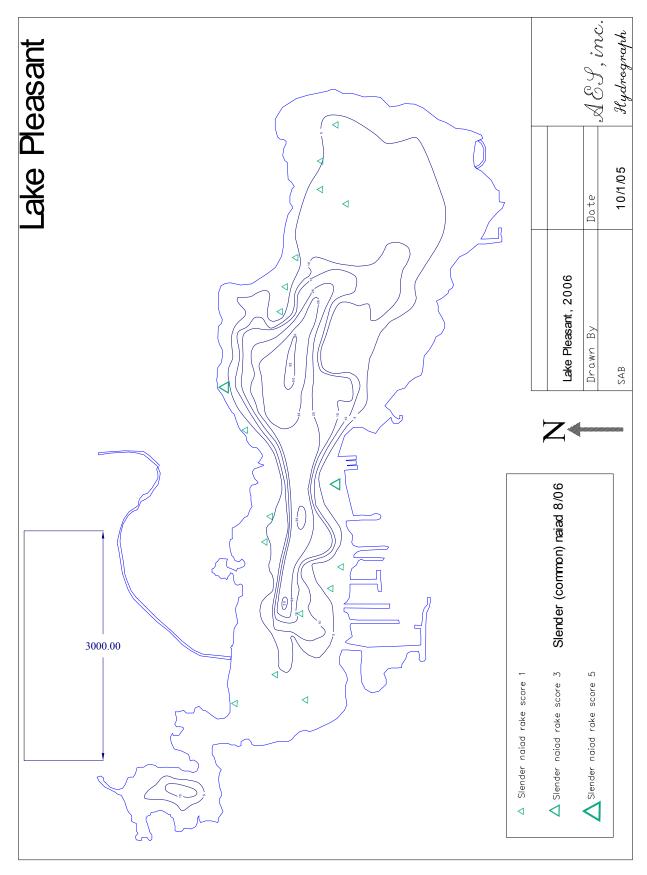


Fig. 9 Slender naiad map for Lake Pleasant, 2006

# 8.3 Macrophyte Inventory Discussion

As usual Lake Pleasant's plant community displayed more diversity than most the lakes in the 21 Indiana Lake reference set. (see table 13) Ten species were collected compared to a mean of 8 for the set of 21 lakes. Nine native species were collected compared to an average of seven for the set of 21 lakes. The mean number of speciesper-site was 1.8 compared to a 21 lake mean of 1.61. The species diversity index score for the 8/15/06 sampling was .75 compared to a 21 lake mean of .66. Vegetation was recovered at 86% of all sampling sites. Scores related to diversity were, however, significantly reduced over the late season scores from 2005. This is probably partly a result of the 2006 season modification of the sampling protocol. In the 2006 sampling, a higher number of samples were collected in deeper water to comply with the new depth-stratified sampling protocol. Ten rake tosses occurred between the 20 and 25 foot depth contour in 2006 compared to only five in 2005. At that depth in Lake Pleasant rake tosses often return only Chara or no plants at all. The August 2006 Tier II data seemed to reinforce observations that the 2,4-D treatments were much more effective in gaining long-term control of Eurasian watermilfoil growth than the Reward® contact herbicide had been in the 2005 treatment. In 2005 Eurasian watermilfoil was collected at 14 sites (18%) while in 2006 none was collected. Chara was the most abundant plant being collected at 77.5% of sampling sites. Illinois pondweed *Potamogeton Illinoensis* a beneficial species of native pondweed, seemed to be slightly less prominent in 2006 being present at only approximately 24% of sampling sites compared to about 43% in 2005. It was the second most abundant plant in the Tier II sampling. The decrease from 2005 may have been partly a result of the modified sampling regime, but slightly decreased water clarity may have played a role. Vallisneria Vallisneria americana a species favored as a food source by waterfowl, was also less prominent in the sampling occurring at 7.5% of sites in 2006 compared to 12% in 2005. Richardson's pondweed Potamogeton richardsonii, a state listed "rare" species was seen but not collected in the sampling. It was collected at six sampling sites in 2005. Whitestem pondweed Potamogeton praelongus a state listed "threatened" species was recovered at 2.5% of sites compared to none being recovered in the late season sampling in 2005. Whorled watermilfoil Myriophyllum verticillatum another state listed "rare" species was present but not recovered in the sampling. This was probably a result of less sampling points occurring in its favored habitat in the lake's channels in 2006 than in 2005 and also the 2, 4-D treatment having controlling this non-target plant in treated areas. It was found to be growing in Redwater Lake in 2006 where no treatment for Eurasian milfoil is expected to take place. This area will serve as an untreated refuge for this uncommon plant. In the 2005 late-season Tier II survey this plant was collected at two sampling points. Slender naiad was the third most abundant plant collected in 2006 being recovered at 22.5% of sites. This was similar to 2005 when it was collected at 24% of sites. Chara was noted growing to a depth of 25 feet in 2006 compared to 26.5 feet in 2005. Since sampling under the new protocol occurred to a depth of 25 feet it proved to be a reasonable match for depth of the plant community. Overall the Tier II sampling indicates the presence of a diverse and healthy plant community and good treatment The table below displays plant samples collected and sent to botanists at Purdue University North Central for identification and/or voucher preservation. Tables are also

provided which display comparison data for various species for the 2005 and 2006 season surveys and data for various species with the lakes various depth contour zones.

Date Collected	Sample Number	Initial Identification (Suspected)	Substrate	Lat	Lon	Other plants in association	Depth	Pudue University North Central Identification
8/15/06	1(Redwater Lake)	Myriophyllum sp.(several plants)	Silt/clay, organic	41 deg 45.70 min N	85 deg 6.52 min W	Potamogeton Illinoensis, Nymphea tuberosa	5 ft	Myriophyllum verticillatum, Myriophyllum sibiricum
9/18/06	No number	Chara sp.	Sand with silt	CH5		No data	3 ft	Chara zeylanica or Chara haitensis

Table 7 Voucher specimens collected in 2006

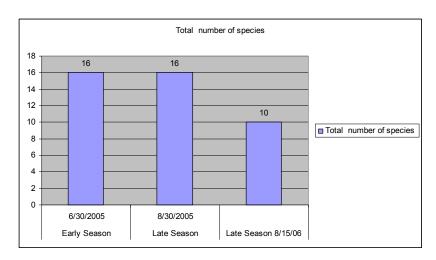


Fig. 10 Total number of species 2005-2006

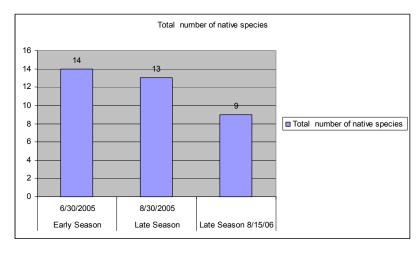


Fig. 11 Total number of native species 2005-2006

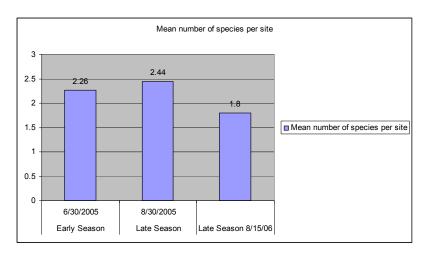


Fig. 12 Mean number of species per site 2005-2006

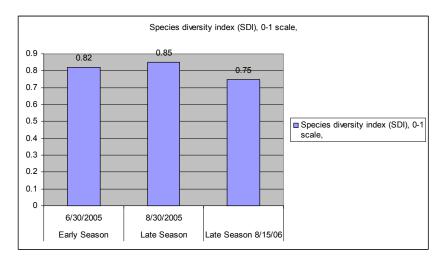


Fig. 13 Species diversity index 2005-2006

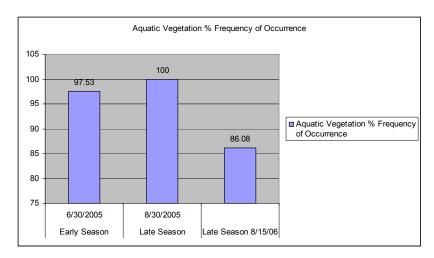


Fig. 14 Aquatic vegetation % frequency of occurrence 2005-2006

Species	occurrence (# of sites)	% of sites	mean density	relative density
Chara	62	77.50%	3	2.35
Eurasian watermilfoil	0			
Curlyleaf pondweed	0			
Illinois pondweed	19	23.75%	2.2	0.51
Vallisneria	6	7.50%	2.7	0.2
Coontail	2	2.50%	3	0.08
Great bladderwort	6	7.50%	1	0.08
Slender naiad (common naiad)	18	22.50%	1.2	0.28
Spiny naiad	17	21.25%	1.9	0.41
Whitestem pondweed	2	2.50%	2	0.05
Sago pondweed	2	2.50%	1	0.03
Variable pondweed	8	10.00%	1	0.1

Table 8 Species specific Tier II descriptors for Lake Pleasant 8/15/06

	6/30/2005	8/30/2005	8/15/06
Plant Common Name	% of sites	% of sites	% of sites
Chara	81%	71%	77.50%
Eurasian watermilfoil	11%	18%	
Curlyleaf pondweed	19%	4%	
Illinois pondweed	37%	43%	23.75%
Vallisneria	12%	16%	7.50%
Coontail	4%	6%	2.50%
Whorled watermilfoil	6%	3%	
Great bladderwort	14%	12%	7.50%
Slender naiad (common			
naiad)	21%	31%	22.50%
Spiny naiad			21.25%
Water stargrass	1%	3%	
Flatstem pondweed	1%	3%	
Richardson's pondweed	2%	8%	
Whitestem pondweed	2%		2.50%
Small pondweed	4%	3%	
Sago pondweed	9%	1%	2.50%
Variable pondweed	12%	13%	10.00%
Secchi Depth (ft)	8.7	11.3	7.0

Table 9 Species % occurrence 2005-2006

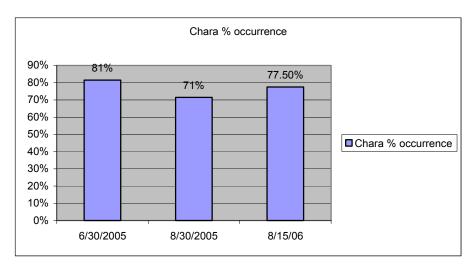


Fig. 15 Chara % occurrence 2005-2006

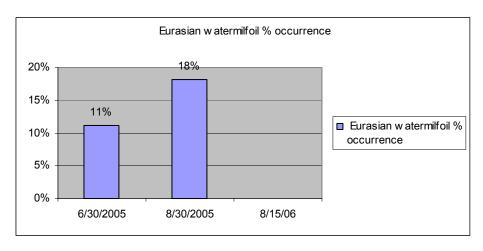


Fig. 16 Eurasian watermilfoil % occurrence 2005-2006

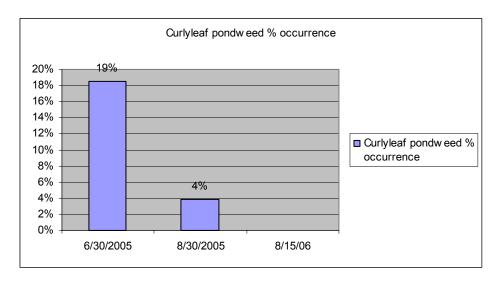


Fig. 17 Curlyleaf pondweed % occurrence 2005-2006

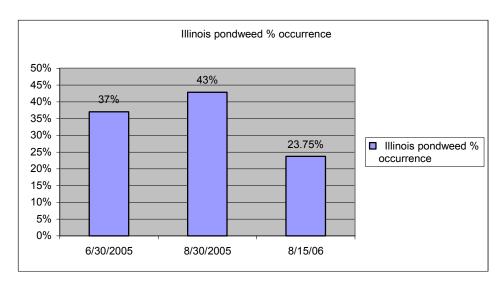


Fig. 18 Illinois pondweed % occurrence 2005-2006

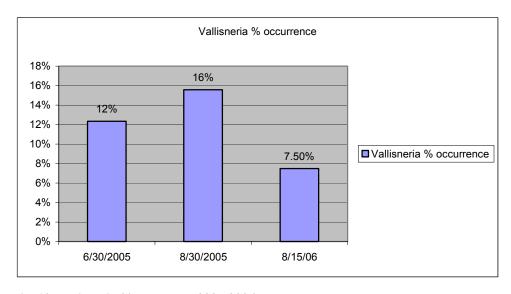


Fig. 19 Vallisneria % occurence 2005-2006

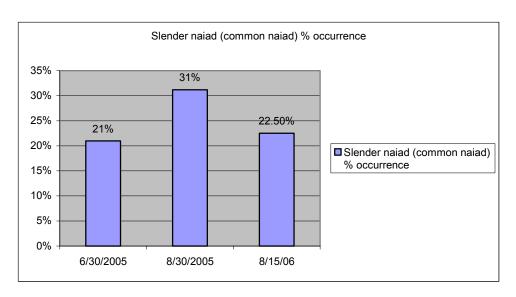


Fig. 20 Slender naiad % occurrence 2005-2006

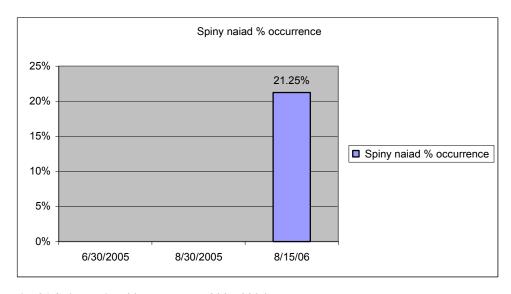


Fig. 21 Spiny naiad % occurrence 2005-2006

## Depth Contour (ft) All

Common Name(s)	# sites	% occurrence 0-5.9 ft contour	mean density	relative density
Chara	62	78.48	3.03	2.38
Illinois pondweed	19	24.05	2.16	0.52
Common naiad	18	22.78	1.22	0.28
Spiny naiad	17	21.52	1.94	0.42
Variable pondweed	8	10.13	1.00	0.10
Vallisneria, Tapegrass	6	7.59	2.67	0.20
Great bladderwort	6	7.59	1.00	0.08
Sago pondweed	2	2.53	1.00	0.03
Coontail	2	2.53	3.00	0.08
Whitestem pondweed	2	2.53	2.00	0.05

Table 10 Species descriptors, all contours

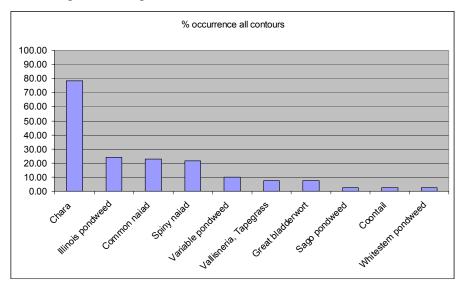


Fig. 22 Species % occurrence, all contours

Lake Pleasant 8/15/06	Contour (ft)
	0-5.9

Descriptor	
Sampling sites	17
Total number of species	8
Total number of native species	8
Mean number of species per site	2.29
Species diversity index (SDI), 0-1 scale,	0.76
Aquatic Vegetation % Frequency of	
Occurrence	94.12

Table 11 Plant community descriptors, 0-5.9 foot contour

# Depth Contour (ft) 0-5.9

Common Name(s)	# sites	% occurrence 0-5.9 ft contour	mean density	relative density
Chara	15	88.24	2.60	2.29
Illinois pondweed	7	41.18	1.29	0.53
Common naiad	8	47.06	1.25	0.59
Spiny naiad	1	5.88	1.00	0.06
Variable pondweed	4	23.53	1.00	0.24
Vallisneria, Tapegrass	1	5.88	1.00	0.06
Great bladderwort	2	11.76	1.00	0.12
Sago pondweed	0	0.00	#DIV/0!	0.00
Coontail	1	5.88	1.00	0.06
Whitestem pondweed	0	0.00	#DIV/0!	0.00

Table 12 Species descriptors 0-5.9 foot contours

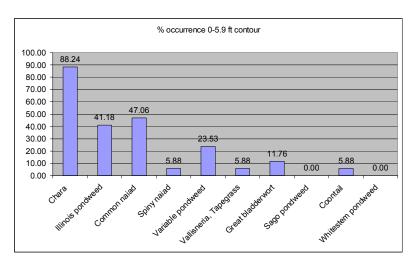


Table 13 Species % occurrence 0-5.9 foot contours

Lake Pleasant 8/15/06	Contour (ft)
	6-10.9

Descriptor	
Sampling sites	18
Total number of species	10
Total number of native species	9
Mean number of species per site	2.94
Species diversity index (SDI), 0-1 scale,	0.83
Aquatic Vegetation % Frequency of	
Occurance	94.44

Table 14 Plant community descriptors 6-10.9 foot contour

Depth Contour (ft) 6-10.9

Common Name(s)	# sites	% occurrence 6-10.9 ft contour	mean density	relative density
Chara	15	83.33	3.00	2.50
Illinois pondweed	10	55.56	2.40	1.33
Common naiad	8	44.44	1.25	0.56
Spiny naiad	8	44.44	1.50	0.67
Variable pondweed	3	16.67	1.00	0.17
Vallisneria, Tapegrass	2	11.11	2.00	0.22
Great bladderwort	3	16.67	1.00	0.17
Sago pondweed	2	11.11	1.00	0.11
Coontail	1	5.56	5.00	0.28
Whitestem pondweed	1	5.56	1.00	0.06

Table 15 Species descriptors 6-10.9 foot contour

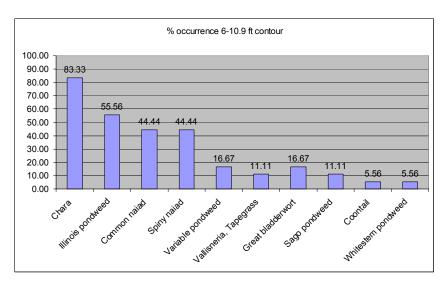


Fig. 23 Species % occurrence 6-10.9 foot contour

Lake Pleasant 8/15/06	Contour (ft)
	11-15.9

Descriptor	
Sampling sites	17
Total number of species	6
Total number of native species	6
Mean number of species per site	1.65
Species diversity index (SDI), 0-1 scale,	0.65
Aquatic Vegetation % Frequency of	
Occurrence	100.00

Table 16 Plant community descriptors 11-15.9 foot contour

## Depth Contour (ft) 11-15.9

Common Name(s)	# sites	% occurrence 11-15.9 ft contour	mean density	relative density
Chara	15	88.24	4.20	3.71
Illinois pondweed	2	11.76	4.00	0.47
Common naiad	2	11.76	1.00	0.12
Spiny naiad	6	35.29	3.00	1.06
Variable pondweed	0	0.00		0.00
Vallisneria, Tapegrass	2	11.76	5.00	0.59
Great bladderwort	0	0.00		0.00
Sago pondweed	0	0.00		0.00
Coontail	0	0.00		0.00
Whitestem pondweed	1	5.88	3.00	0.18

Table 17 Species descriptors 11-15.9 foot contour

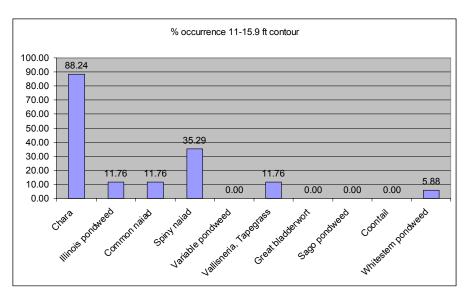


Fig. 24 Species % occurrence 11-15.9 foot countour

Lake Pleasant 8/15/06	Contour (ft)
	16-20.9

(Submersed species only, III. algae excluded)	1
Descriptor	
Sampling sites	17
Total number of species	5
Total number of native species	5
Mean number of species per site	1.06
Species diversity index (SDI), 0-1 scale,	0.38
Aquatic Vegetation % Frequency of	
Occurrence	82.35

Table 18 Plant community descriptors, 16-20.9 foot contour

Depth Contour (ft) 16-20.9

Common Name(s)	# sites	% occurrence 16-20.9 ft contour	mean density	relative density
Chara	14	82.35	2.57	2.12
Illinois pondweed	0	0.00		0.00
Common naiad	0	0.00		0.00
Spiny naiad	1	5.88	1.00	0.06
Variable pondweed	1	5.88	1.00	0.06
Vallisneria, Tapegrass	1	5.88	1.00	0.06
Great bladderwort	1	5.88	1.00	0.06
Sago pondweed	0	0.00		0.00
Coontail	0	0.00		0.00
Whitestem pondweed	0	0.00		0.00

Table 19 Species descriptors, 16-20.9 foot contour

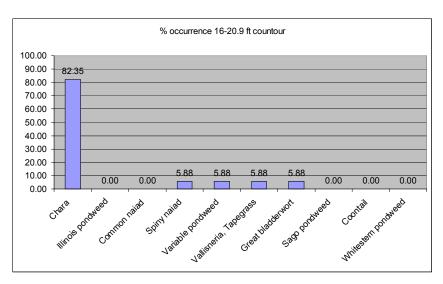


Fig. 25 Species % occurrence 16-20.9 foot contour

Lake Pleasant 8/15/06	Contour (ft)
	21-25

Descriptor	
Sampling sites	10
Total number of species	2
Total number of native species	2
Mean number of species per site	0.40
Species diversity index (SDI), 0-1 scale,	0.38
Aquatic Vegetation % Frequency of	
Occurrence	40.00

Table 20 Plant community descriptors, 21-25 foot contour

# Depth Contour (ft) 21-25

Common Name(s)	# sites	% occurance 21-25 ft contour	mean density	relative density
Chara	3	30.00	1.67	0.50
Illinois pondweed	0	0.00		0.00
Common naiad	0	0.00		0.00
Spiny naiad	1	10.00	1.00	0.10
Variable pondweed	0	0.00		0.00
Vallisneria, Tapegrass	0	0.00		0.00
Great bladderwort	0	0.00		0.00
Sago pondweed	0	0.00		0.00
Coontail	0	0.00		0.00
Whitestem pondweed	0	0.00		0.00

Table 21 Species descriptors, 21-25 foot contour

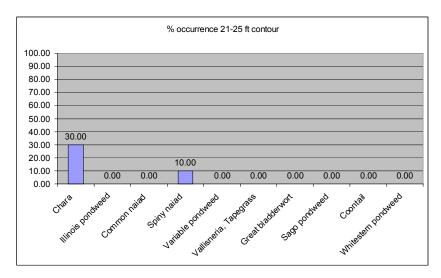


Fig. 26 Species % occurance, 21-25 foot contour

#### 9.0 Aquatic Vegetation Management Alternatives

No new applicable plant management alternatives are available at this time. New alternative selective herbicides may be released to the market and prove efficacious in the near future and will be considered for use on Lake Pleasant at that time.

#### 10.0 Public Involvement

A public meeting was held on 6/10/06 at Lake Pleasant. Approximately 19 people were in attendance. A discussion was held about the status and goals of the Lake Pleasant Aquatic Plant Management Plan and opportunity was provided for lake residents to ask questions and provide input regarding the 2006 season's plant management and assocated water-use restrictions. A Eurasian watermilfoil plant was passed around the room to improve the ability of lake residents to identify and recognize it. A speaker from the Steuben County Lakes Council was also present to discuss the impacts of boating use on area lakes and ongoing efforts to measure and evaluate it. The Lake Use Survey below (fig. 27) was distributed to those present, filled out, and collected. Nineteen surveys were completed. Results are tabulated in table 29 below. Survey respondents were all lake property owners and 18 of 19 were association members. Most had owned property at the lake for more than ten years. When asked to mark lake activities enjoyed often 100% of respondents reported swimming and boating. Sixteen of 19 reported fishing, twelve marked skiing/tubing, seven reported that they irrigated from the lake and one reported waterfowl hunting as an activity. Nine respondents reported that they had aquatic plants along their shoreline in nuisance quantities while eight indicated that they did not. Eleven of the respondents reported owning property on one of the lake's channels while 12 indicated they had lakeshore property. Four reported both (probable owners of corner lots at a channel mouth). Eleven respondents felt that aquatic

vegetation did affect the value of their property, while five felt that it did not. Respondents were unanimously in favor of continued efforts to control vegetation. Seventeen of nineteen reported that they understood that LARE funding would only assist with the control of exotic plants; two did not answer this question. When asked to choose from a list of other possible problems at the lake 17 marked "Canada geese", nine each indicated "too many plants" and "dredging needed" as a problem. It was specified by two respondents that the dredging was needed on a channel. Two respondents indicated that too many boats access the lake and one indicated "too much fishing" as a problem. When invited to write-in further comments one resident indicated that the aquatic weeds on the channel were worse in 2006 than in the previous season. complained of the erratic operation of personal watercraft on the lake. Overall the Lake Pleasant residents don't appear to feel that they have a profound problem with aquatic plants at their individual properties yet, but do feel their property values can be affected by their invasive aquatic plant problems and are overwhelmingly in favor of continued efforts to control Eurasian watermilfoil. This is probably an indication that the residents understand the potential for a huge problem to develop at Pleasant Lake if Eurasian watermilfoil is not actively controlled. Educational efforts appear to have been enjoying some effectiveness. With swimming and boating being the most popular activities of the respondents, avoiding a blossoming colonization by invasive plants will be important at Lake Pleasant.

Lake Use Survey Lake Pleasant 6/10/06
1. Are you a lake property owner? YesNo
2. Are you currently a member of your lake association? Yes \ No
3. How many years have you been at the lake? (circle one) 2 or less,  2 - 5 years  5-10 years  Over 10 years
4. How do you use the lake (mark all that apply)  SwimmingIrrigation (including lawn)Waterfowl hunting  BoatingFishingSkiing/Tubing  Other
5. Do you have aquatic plants at your shoreline in nuisance quantities? Yes 👱 No
6. Do you own or occupy property on a channel Lakeshore Neither
7. Does the level of vegetation in the lake affect your property values? Yes 🔀 No
8. Are you in favor of continuing efforts to control vegetation on the lake? Yes X
9. Are you aware that the LARE funds will only apply to work controlling invasive exotic species, and more work may need to be privately funded? Yes No

Fig. 27 Lake Pleasant user survey 6/10/06

Lake Property Owner?	Yes		No							
		19								
Are you an association member?	Yes		No							
		18								
Years at the lake?	2 or less		two to five	five to ten	Over 10					
		2		5		12				
How do you use the lake?	Swim		Irrigation	Waterfowl	Boating		Fishing		Ski/Tube	
		19	7	1		19		16		12
									Other	
Do you have nusiance plants?	Yes		No						1 diving	
		9	8							
Do you own property on	Channel		Lakeshore	Neither						
		11	12							
Does the lake vegetation affect	Yes		No							
your property value?		11	5							
Are you in favor of continued	Yes		No							
vegetation control?		19								
Are you aware that LARE funds will	Yes		No							
only apply to exotics?		17								
Mark other lake problems	Too many boats accessing			Too much fishing	Canada Geese		Dredging needed		Flooding/La level	ake
		2		1		17		9		
	Too many plants			Not enough plants			Poor wate quality	r		
	,	9		0				0		
				Pier/Funneling problem				-		
Add any comments				0						
Weeds in channel worse in 2006										
Dredging needed in channels										
Dredging needed in channels										
							_			

Table 22 Lake Pleasant 2006 user survey results

# 11.0 Public Education

Efforts at public education seem to be paying off at Lake Pleasant. Residents and users who have attended meetings seem to understand the potential for recreational and ecological impairment at Lake Pleasant if Eurasian watermilfoil is allowed to increase its colonization of the lake. At the same time they understand efforts at containment and control can continue to increase but do not necessarily guarantee success. The issue of controlling Purple loosestrife and other invasive wetland plants has also been addressed at the meetings and these efforts should continue in 2007. It will be wise to stress the possibility of watercraft spreading invasive plants or introducing new invasive plants to the lake. This will be especially important now that Hydrilla has been found in Indiana. The posting of invasive species information at the private accesses at Lake Pleasant and a basic screening process for inbound watercraft will be steps to consider to help protect the lake.

### 11.1 Hydrilla and its implications for Lake Pleasant

Keeping lake residents and users aware of the possibility of bringing in new invasive species on watercraft trailers will be especially important now that Hydrilla has been found in Indiana. Hydrilla *Hydrilla verticillata* is an invasive submersed aquatic plant thought to be native to Africa, Australia, and parts of Asia. As a hearty growing plant Hydrilla was used in aquariums and this led to its introduction into Florida waters in 1960. Since then Hydrilla has spread to become the single most problematic plant in the United States. (See USGS map below) In Florida alone millions are spent in controlling the growth of Hydrilla each year. The potential exists for the same type of damage on

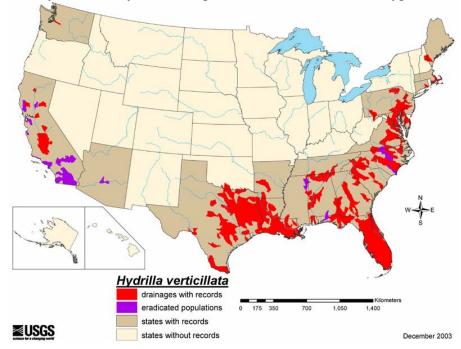


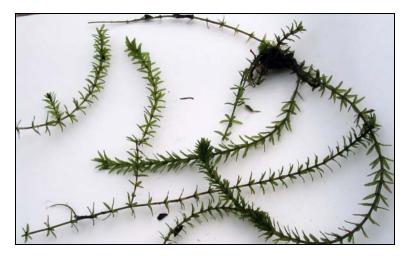
Fig. 28 Known occurrences of Hydrilla in the U.S. in 2003. From the USGS website, http://nas.er.usgs.gov/taxgroup/plants/docs/hy\_verti.html

Indiana waterways if Hydrilla is allowed to spread. Like many invasive aquatic plants Hydrilla can form dense surface mats depriving native plant communities of light, decreasing plant community diversity and causing serious impairment of recreational activities including fishing, swimming, and boating.



Fig. 29 Hydrilla mats clog the surface of Lake Conroe Texas. Photo courtesy of Earl Chilton, Texas Parks and Wildlife Department

Hydrilla can spread by fragmentation, or the production of seeds, tubers (root structures), or turions (seed-like plant buds). Because of the potential for spread through fragmentation, plant material hitching a ride on watercraft trailers is probably a major mechanism of introduction. Tubers and turions can be very hearty, surviving dry periods or herbicide treatments and remaining hidden in the lake bottom for extended periods of time. Because of these characteristics great ecological damage and recreational impairment can occur in watersheds colonized by Hydrilla. In 2006 Hydrilla was discovered in Lake Manitou in Rochester Indiana (Fulton County). This is the first known occurrence of this plant in the Midwest. The Indiana Department of Natural Resources has devised a plan for eradicating and controlling the Hydrilla to prevent spread to other water bodies. Checks of other lakes in close proximity to Lake Manitou have not located any other Hydrilla, so it is possible that the plant is only in Lake Manitou at this time. However, it's also possible that other lakes contain young Hydrilla infestations that have yet to be recognized so it's important that associations and lake residents learn to identify this plant. Acting early in spotting Hydrilla can help prevent spread and ultimately prevent a huge toll on the ecology and recreational value of Indiana lakes. Whereas many Steuben County lakes are popular boating and sportfishing destinations there is a definite possibility that this plant could appear in Lake Pleasant in the future. Information on Hydrilla identification should be presented to the Lake Pleasant users at meetings as a regular part of the lake resident educational program.



**Fig. 30** Hydrilla is similar in appearance to the native plant Elodea canadensis and also Brazilian elodea, an exotic also recently found in Indiana. It forms long stems containing many whorls of short leaves. Photo Courtesy of Dr. John H. Rodgers, Jr.

## 11.1.1 Hydrilla Identification

Hydrilla strongly resembles the native aquatic plant Elodea *Elodea canadensis* and the introduced species Brazilian elodea *Egeria Densa*. Both these species can be found in Indiana although the occurrence of Brazilian elodea has been very limited thus far. Native Elodea is a part of the Lake Pleasant plant community. Hydrilla is a long slender plant that sometimes branches and has short leaves arranged around the stem in a starlike (whorled) pattern. Characteristics which differentiate Hydrilla from Elodea and Brazilian Elodea include a typical leaf count of five in the whorl. Brazilian elodea typically has four to six leaves but never three, and native Elodea usually has three. (Fig 31) Small teeth are also present on the midrib of Hydrilla leaves and may give the plant a "rough" feel.

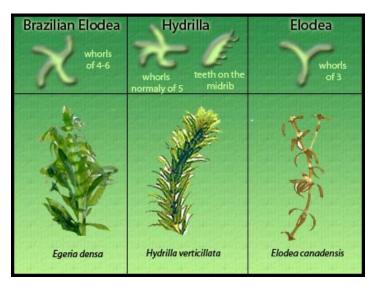


Fig. 31 Brazilian elodea has a typical leaf count of 4-6, while Hydrilla's is usually 5, and Elodea's 3

Photo courtesy of Rob Nelson at ExploreBiodiversity.com

Hydrilla also has small serrations along the leaf edges (fig 32). Another distinguishing characteristic of Hydrilla is the presence of tubers (.2 to .4 inch long off-white structures attached to the root) (fig 33).



Fig. 32 Edges of Hydrilla leaves have fine serrations visible upon close examination Photo Courtesy of Dr. John H. Rodgers, Jr.



**Fig. 33** Hydrilla plants with tubers attached. Photo courtesy of King County Natural Resources and Parks, Water and Land Resources Division

Anyone noting the presence of Hydrilla or Brazilian elodea is asked to immediately contact Doug Keller, Invasive species coordinator for the Indiana Department of Natural Resources at 317-234-3883, email: **dkeller@dnr.in.gov**. If you have questions about the identity of aquatic plants found, photos of the plants can be e-mailed to Doug for basic identification to determine if further action is required. More information on stopping the spread of invasive aquatic species is available online at **http://www.protectyourwaters.net/** 

### 12.0 Integrated Management Action Strategy

Based on the value of Lake Pleasant as a unique public resource with three RTE species present in its plant community, the overwhelming desire by its users to continue to control the lake's emerging Eurasian milfoil problem, and the high degree of effectiveness of the 2006 season treatment, it's recommended that the 2006 season's management regime be repeated in 2007. This includes the treatment of up to 25 acres of dense Eurasian watermilfoil growth with 2, 4-D granular aquatic herbicide. Retreatment of up to 25 acres should be planned in case the initial treatment does not have the lasting effect noted during the 2006 season. The lake association should discuss the possibility of establishing a basic screening process for boats entering through its two access points. Monitoring and aquatic plant surveys per the 2007 IDNR protocol should be used to evaluate changes in the lake's plant community and treatment effectiveness. At least one public meeting should be dedicated to help educate the lake residents and allow for the collection of ideas and opinions from lake users and the general public. Because the extensive colonization of Lake Pleasant's riparian wetlands by Purple loosestrife could have implications for water quality, a basic survey should be planned in 2007 to evaluate the colonization of Lake Pleasant's shoreline and riparian wetlands by Purple Loosestrife. Residents should be reminded to take basic efforts to control these plants along their own shoreline. This survey should be designed to evaluate the feasibility of a lake-wide or watershed-wide control program for this invasive plant.

## 13.0 Estimated Project Budget and Timeline

# 2007

- -June 2007 hold public meeting to discuss plan with community and lake users \$200.00
- May 2007 Map Exotic Plants and Designate Treatment areas \$900.00
- -Mid to late May 2007 2-4-D treatment to designated areas maximum 25 acres \$10900.00
- -July 2007 Tier II Plant Survey, Designate any retreatment areas \$1113.00
- -July 2007 Basic shoreline survey of Purple loosestrife \$300.00
- -July 2007 2-4-D treatment to designated areas of re-growth, maximum 25 acres \$10900.00
- -November 2007 AVMP document preparation \$600.00

2007 Total \$24913.00

#### 14.0 References Cited

Pearson, J. 2004, A sampling method to assess occurrence, abundance and distribution of submersed aquatic plants in Indiana lakes, Indiana Department of Natural Resources, Division of Fish and Wildlife, Tri-Lakes Fisheries Station, 5570 North Hatchery Road Columbia City, Indiana 46725

IDNR 2004. Procedure manual for surveying aquatic egetation: Tier I and Tier II, Indiana Department of Natural Resources, Indianapolis, Indiana.

Aquatic Enhancement & Survey, Inc. 2006. Aquatic Plant Management Plan, Lake Pleasant, Steuben County, Indiana, 2006-2010. Aquatic Enhancement & Survey, Inc., 207 Hoosier Dr., Angola, IN 46703

# 15.0 Appendices

# Appendix A Tier I Data Sheets 5/06

	Aquatic Vegetat							Page 1 of	
	State of Indian	Departmen	1						
	1100	PATIC ENHA	DATE: 5/20/01						
		SITE INFO	SITE	COORDINATES					
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	Bed Size: 192.44	LAKE	- PU	KASP	1N.I		Latitude:		
	Substrate: 3	Waterbody ID:					Longitude:		
	Mari? O	Total # of Spec					Max. Lak	seward Extent of Bed	
	High Organic?				ance at Site		Latitude:		
			N:		F:	E: (	Longitude:		
		CIES INFORM				1			
V	Species Code	Abundance	QE	Vehr.	Ref. ID	-	Individual Pla	nt Bed Survey	
N VOVEHER	POIL					1	0		
W TAKEN	POCR3 V	3				1	1		
1	MYSP 2 V	3				1			
}	POGR					1	)	·	
PUSILLOS		2				1	)	1	
. 4.	UTMA					1			
	NAFL								
	POPR 5						(		
	MYVE						1		
	POPE 6						Travel Pattern		
	POZO						Plant Bed ID # 01		
	CEDE				50.10		rant bed iD # 01		
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	NYTU V	2	$\dashv$						
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	AKVM				- 122-11				
	NULU								
	TYLA								
	TYAN								
3	REMINDER INFORM Substrate: Mari	MATION							
3 4 5	1 = SitUClay	ent rganic sent	1 = < 2% 0 2 = 2-20% 1 3 = 21-60%				RE Code; = as defined = Species suspe 2 = Genus suspected = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map	
					Abundance	: v	oucher:		
	N = Non			2 = 3 =	= < 2% = 2-20% = 21-60% = > 60%	0	= Not Taken = Taken, not varified = Taken, varifiet		

Aquatic Vegetation	on Plant E	Bed D	ata S	heet			Page of		
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	SITE INFO	RMAT	1	COORDINATES					
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Substrate: 3	Waterbody ID:					Latitude:			
Mari?	Total # of Spec	ion				Longitude:			
High Organic?			Abunda				eward Extent of Bed		
- Company ()	S:	N:	-	ance at Site	E:	Latitude:			
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POGR					1				
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UTMA							-		
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POPR 5 X		_			-				
MYVE					1	1			
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TYLA									
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Substrate: Marl = Sill/Clay 1 = Pres = Silt w/Sand 0 = abse = Sand w/Silt = Hard Clay High Or = Gravel/Rock 1 = Pres = Sand 0 = abse	ent ganic ent		1 2 3	anopy: = < 2% = 2-20% = 21-60% = > 60%	0	QE Code:    = as defined   = Species suspected   = Genus suspected   = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map		
Overall: N = Non	Surface Cover rooted floating ting, rooted freely rgent		3	Abundanc = < 2% = 2-20% = 21-60% = > 60%	0	foucher: = Not Taken = Taken, not varified = Taken, varified			

Aquatic Vege						Page <u>9</u> of
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		SITE INFO		TION		SITE COORDINATES
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sed Size: 46.	95 AC	LAKE	- PU	RASA	NT	Latitude:
Substrate: 2		Waterbody ID:				Longitude:
Mart?		Total # of Spec	ies			Max. Lakeward Extent of Bed
ligh Organic?		(	Canop	yAbunda	ance at Site	
		S:	N:		F:	E: Longitude:
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NAFL		_				
POPR 5 V		7.				
MYVE						
POPE 6						Travel Pattern
POZO						Plant Bed ID # 01
CEDE					-	Flant beg ID # 01
POAM						
SC SP.			-			Comments:
LYSA			e nee			8-13'
NYTU						8-13
SA SP.				-		
AKVM	-					
NULU	-					
TYLA						
TYAN	_					
REMINDER IN	_	ATION				
	Marl 1 = Pres	ent			anopy: = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
	0 = abse			2	= 2-20%	0 = as defined Unique number or 1 = Species susp€ letter to denote specific
Hard Clay	High Or	ganic			= 21-60% = > 60%	2 = Genus suspected location of a species; 3 = Unknown referenced on attached map
	1 = Pres 0 = abse					referenced on attached map
					Abundan	e: Voucher:
		Surface Cover			= < 2% = 2-20%	0 = Not Taken
F	= Float	ing, rooted		3	= 21-60%	1 = Taken, not varified 2 = Taken, varified
	E = Eme S = Subr			4	= > 60%	

Aquatic Vege	tation Plant B	ed Da	ata S	heet	Page/O of
	diana Departmen				
	A QUATIC ENHA				
	SITE INFO	RMAT	SITE COORDINATES		
Plant Bed ID: 4	Waterbody Nar		Center of the Bed		
Bed Size: 16,574	LAKE	PU	EASA	NT	Latitude:
Substrate: 2	Waterbody ID:				Longitude:
Marl?	Total # of Spec	ies			
High Organic?			Ahund	ance at Sit	Max. Lakeward Extent of Bed
	S:	N:	radita	F:	E: Longitude:
	SPECIES INFORM	ATION			
Species Code		QE	Vehr.	Ref. ID	Individual Plant Bed Survey
CH ? AR	14			1101110	Individual Fiant Bed Survey
POIL					~
POCK3					
MYSP 2					1
POGR					1 1
PORI					1 )
UTMA					
NAFL POPR 5					
MYVE					
POPE 6		-			Travel Pattern
POZO					
CEDE		-	-		Plant Bed ID # 01
POAM		-			1
SC SP.					Comments:
LYSA	_	_			13'-18'
NYTU		-+			/3 78
SA SP.		-			
ARVM		-			
NULU		-			
TYLA		_	-		
TYAN		_	_		
REMINDER IN					
	fari = Present			Canopy: = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
2 = Silt w/Sand 0 3 = Sand w/Silt	= absent		2	! = 2-20%	1 = Species susper letter to denote specific
4 = Hard Clay H	ligh Organic			= 21-60% = > 60%	2 = Genus suspected location of a species; 3 = Unknown referenced on attached map
	= Present = absent				isososos on allacited map
x = 25(20,002.5) 27				Abundan	ce: Voucher:
	verall Surface Cover = Nonrooted floating			= < 2% = 2-20%	0 = Not Taken 1 = Taken, not varified
F	= Floating, rooted = Emergent		3	= 21-60%	2 = Taken, not varified
	= Submersed		4	= > 60%	

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	Aquatic Vegetation	on Plant B	ed Data	Sheet			Dans of
	State of Indiana						Page of
	ORGANIZATION: A W				DATE: 3/20/00	4	
		SITE INFO		COORDINATES			
	Plant Bed ID: 5	Waterbody Nan				Cen	ter of the Bed
	Bed Size: . 44 At	LAKE	PURA	SANT		Latitude:	
	Substrate: 2	Waterbody ID:				Longitude:	
	Marl?	Total # of Speci	es			Max. Lake	eward Extent of Bed
	High Organic?		CanopyAbu	ndance at Sit	е	Latitude:	
		S:	N:	F:	E: 2	Longitude:	
	SPE	CIES INFORMA	ATION		_		
	Species Code	Abundance	QE Vel	r. Ref. ID		Individual Plan	t Bed Survey
ALGA V'	CH ? AR					^	
1	POIL V	1				1	
	POCR3						
11	MYSP2 V	2					
Dr.HV	POGR					\	1
102	PORI				1	)	1
- 1	/UTMA				1		
1 , JiBust	NAFL				1	1	
+ 12	NAFL POPR 5				1	}	7111
Willshow I TOUT	MYVE	3			1	City	
-1	POPE 6	2			1	Year of the second	Travel Pattern
IRU.L	POZO	,			1	Plant Bed ID # 01	
2	CEDE /				1		
	POAM	2			1		
	SCSP. 1	2			Comments	:	
	LYSA /				1		
	NYTU	2		1	1		
	SA SP.				1		
	ARVM				1		
	NULU				1		
	/TYLA 1/	4			1		
LAREXSO,V	TYAN				1		
1	REMINDER INFORM Substrate: Mari	MATION			***************************************		AM AL HAS
t	1 = Sill/Clay 1 = Pre			Canopy: 1 = < 2%		QE Code: 0 = as defined	Reference ID: Unique number or
	2 = Silt w/Sand 0 = abs 3 = Sand w/Silt	ent		2 = 2-20% 3 = 21-60%		1 = Species suspe 2 = Genus suspected	letter to denote specific
	4 = Hard Clay High O 5 = Gravel/Rock 1 = Pre			4 = > 60%		3 = Unknown	location of a species; referenced on attached map
	5 = Gravel/Rock 1 = Pre 6 = Sand 0 = abs						
	Overall	Surface Cover		Abundan	ce:	Voucher:	İ
	N = Nor	prooted floating		1 = < 2% 2 = 2-20%		0 = Not Taken 1 = Taken, not varified	
	F = Floa E = Eme	ating, rooted ergent		3 = 21-60% 4 = > 60%		2 = Taken, varified	
		mersed		0070			
L							

	Aquatic Vegetation	on Plant Bed [	Data Sheet			Dans /		
		a Department of N		Page of				
	ORGANIZATION: A QUI		DATE: 5/20	106				
		SITE INFORMA		COORDINATES				
	Plant Bed ID:	Waterbody Name:	CACALIT		Cer	nter of the Bed		
	Bed Size: 2,56 AC	LAKE PL	RASANI		Latitude:			
	Substrate:	Waterbody ID:			Longitude:			
	High Organic?	Total # of Species	yAbundance at Site			eward Extent of Bed		
		S: N:	F:	E: 1	Latitude: Longitude:			
	SPE	CIES INFORMATION	1		Longitude.			
115	Species Code	Abundance QE	Vehr. Ref. ID		Individual Plan	nt Bed Survey		
PHAR, L	CH ? AR	2			_	•		
1	POIL	2		1	(			
PHAR L	POCR3	2		4		1		
	POGR	3	-	-				
EMNASP.	PORI		-	-	)			
	UTMA	9		-				
1	NAFL	2	<del>                                     </del>	-				
i	POPR 5			1 .	<b>S</b>			
	MYVE			1	Travel Pattern			
	POPE 6	2		1				
	POZO V	2		1	Plant Bed ID # 01			
	CEOE			1				
_	POAM					22		
4	SCSP.	2		Comments				
15	LYSA	2		th	ich mil	Foil		
	NYTU	2		, ,	,			
	SA SP. ARVM			1				
	NULU							
	TYLA							
	TYAN							
	REMINDER INFORM Substrate: Mari	ATION	Canopy:		QE Code:	2.4		
	1 = Silt/Clay		1 = < 2% 2 = 2-20%		0 = as defined	Reference ID: Unique number or		
	3 = Sand w/Silt 4 = Hard Clay High Or		3 = 21-60%		1 = Species suspected 2 = Genus suspected	letter to denote specific location of a species;		
	5 = Gravel/Rock 1 = Pres	sent	4 = > 60%	3	3 = Unknown	referenced on attached map		
	6 = Sand 0 = abse		Abundano	ce:	Voucher:			
		Surface Cover rooted floating	1 = < 2% 2 = 2-20%	(	0 = Not Taken 1 = Taken, not varified			
	F = Floa E = Eme	ting, rooted	3 = 21-60% 4 = > 60%		2 = Taken, varified			
	S = Subr		4 0076					

Aquatic Vege	tation Plant B	ed D	ata S	heet			Page of	
	liana Department	_				,	1	
ORGANIZATION: A	QUATIC ENHA	NCEN	1.ENT	& SURVE	Y, INC.	DATE: 5/20/	106	
	SITE INFO	RMAT	TION	1 - 3 - 3 - 3		SITE	COORDINATES	
Plant Bed ID: 7	Waterbody Nar					1	nter of the Bed	
Bed Size: 125 A	LAKE	PU	EASA	NT		Latitude:	101 01 110 1500	
Substrate: 2	Waterbody ID:					Longitude:		
Mari?	Total # of Spec	ies			***************************************		eward Extent of Bed	
High Organic? 6			vAbund	ance at Site	9	Latitude:	SWAIG EXTOR OF DEG	
		N:		F:	E:	Longitude:		
	SPECIES INFORM	ATION			-			
Species Code	Abundance	QE	Vchr.	Ref. ID	7	Individual Plan	nt Bed Survey	
CH ? AR					1			
POIL					1	_		
POCK3		1900			1	\		
MYSP 2					1	5		
POGR					1	1	1	
PORI					1	)	1	
UTMA			<del>                                     </del>		1		_	
NAFL			-		1	1		
POPR 5				-	1	1	11/17	
			-		1			
MYVE			-		-	Zi.	Travel Pattern	
POPE 6				-	-			
P020					+	Plant Bed ID # 01		
CEDE		-	-		1			
SCSP. V					Comments			
	2				1	Z.1		
LYSA					We	STOF MAP,	position	
NYTU					1	,		
SA SP.					1			
ARVM					1			
NULU V	12			CP 4 1 1 100 E-1 - 14 13 13 14 14 A				
TYLA					1			
TYAN REMINDER IN	ORMATION							
Substrate: N	lari			Сапору:		QE Code:	Reference ID:	
전 - 1 (보통) (1 (1 전투) - 1 (1 - 1 ) (1 (1 - 1 ) (1 ) (1 ) (1	= Present = absent			1 = < 2% 2 = 2-20%		0 = as defined 1 = Species susp€	Unique number or	
3 = Sand w/Silt	=-77.70%			3 = 21-60%		2 = Genus suspected	letter to denote specific location of a species;	
	igh Organic			4 = > 60%		3 = Unknown	referenced on attached map	
	= Present = absent							
	word! Confee Co		200	Abundan		Voucher:		
	verall Surface Cover = Nonrooted floating			1 = < 2%		0 = Not Taken		
	= Floating, rooted		2 = 2-20% 3 = 21-60%			1 = Taken, not varified 2 = Taken, varifier		
	= Emergent		4	= > 60%				

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	Aquatic Vegetation Plant Bed Data Sheet									
	State of Indiana	a Departmen	t of Na	tural R	Resources					
	ORGANIZATION: A QUI					Y, INC.	DATE: 5/7.0	1/06		
		SITE INFO	attended to the same					COORDINATES		
	Plant Bed ID:	Waterbody Na	0.000					nter of the Bed		
	Bed Size: ,27 AC	LAKE	= PU	EASA	INT		Latitude:	nor or the bed		
	Substrate: 7	Waterbody ID:					Longitude:			
	Mari?	Total # of Spec	cies					eward Extent of Bed		
	Hlgh Organic?		Canopy	Abund	ance at Site		Latitude:	THAIR EXICITE OF Deg		
		S:	N:		F:	E: 7	Longitude:			
	SPE	CIES INFORM	ATION			-				
_	Species Code	Abundance	QE	Vehr.	Ref. ID		Individual Plan	et Bed Survey		
<b>≥</b> 6,	CH ? AR	2								
	POIL	2					(			
POCHV ELCA.V	POCR3 V	5				1		1		
TICAL	MYSP2 V	3								
ELCH.	POGR						1			
TANK	PORI					1				
	UTMA									
	NAFL						1			
	POPR 5						1			
	MYVE	2					Gill	Travel Pattern		
	POPE 6 V	2						Traver Pattern		
	P020						Plant Bed ID # 01			
	CEDE									
_	POAM									
-21-1	SC SP.	2				Comments	•			
IRVIV	LYSA									
l	NYTU	2								
	SA SP.									
	ARVM									
	NULU V									
	TYLA V		-	-						
	TYAN REMINDER INFORM	ATION								
	Substrate: Marl 1 = Silt/Clay 1 = Pres	nont.			Сапору:		QE Code:	Reference ID:		
	2 = Silt w/Sand 0 = abs				1 = < 2% 2 = 2-20%		0 = as defined 1 = Species suspe	Unique number or letter to denote specific		
	3 = Sand w/Silt 4 = Hard Clay High Or	rganic			3 = 21-60% 3 = > 60%		2 = Genus suspected	location of a species;		
	5 = Gravel/Rock 1 = Pres	sent		•			3 = Unknown	referenced on attached map		
	6 = Sand 0 = abse	ent			Abundanc	e:	Voucher:			
		Surface Cover			= < 2%		0 = Not Taken			
	F = Floa	ting, rooted			= 2-20% = 21-60%		1 = Taken, not varified 2 = Taken, varified			
	E = Eme S = Sub			4	= > 60%		Tomore 2000 (1997)			
1	472 MENTE									

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	diana Departmen						Page of
ORGANIZATION: A	QUATIC ENHA	NCEA	1 ENT a	& SURV	EY, INC.	DATE: 5/20	106
	SITE INFO	RMAT	TION			, ,	COORDINATES
Plant Bed ID:	Waterbody Nar						nter of the Bed
Bed Size: 7.2	AC. LAKE	PU	EASP	NT		Latitude:	nor or the bed
Substrate: 2	Waterbody ID:					Longitude:	
Mari?	Total # of Spec	ies	-				eward Extent of Bed
High Organic?			yAbund	ance at Sit	6	Latitude:	eward Extent of Ded
		N:		F:	E:	Longitude:	
	SPECIES INFORM	ATION					
Species Code	Abundance	QE	Vehr.	Ref. ID	7	Individual Plan	nt Red Survey
CH ? AR	V 2				1		n bed salvey
POIL					1	~	
POCR3	,				1		)
MYSP 2 1	/ 3				1	<u>_</u>	
POGR					1	)	
PORIL	1					)	101
UTMA					1		_
NAFL					1		
POPR 5 L	1 2				1	<b>S</b>	
MYVE					1		
POPE 6					1	7	Travel Pattern
POZO					1	Plant Bed ID # 01	
CEDE					1	566 15 11 01	
POAM					1		
SC SP.					Comments	:	
LYSA					1		
NYTU					1		
SA SP.					1		
ARVM					1		
NULU					1		
TYLA					1		
TYAN							
REMINDER INF	ORMATION		,		H-1-3-1-1	10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
I = Silt/Clay 1	= Present		1	= < 2%		QE Code; 0 = as defined	Reference ID: Unique number or
2 = Silt w/Sand 0 3 = Sand w/Silt	= absent			= 2-20%		1 = Species suspe	letter to denote specific
	igh Organic			= 21-60% = > 60%		2 = Genus suspected 3 = Unknown	location of a species;
	= Present		-	- 00/6		3 - UNKNOWN	referenced on attached map
B = Sand 0	= absent			121217			
O	verall Surface Cover			Abundan		Voucher:	);
	= Nonrooted floating			= < 2% = 2-20%		0 = Not Taken	
	= Floating, rooted			= 21-60%		1 = Taken, not varified 2 = Taken, varified	
	= Emergent			= > 60%		- Tannot	
S:	= Submersed						1

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Aquatic Vege	tation Plant B	ed D	ata S	heet	Page of
State of In	idiana Departmen	t of Na	tural R	esources	
ORGANIZATION:	A QUATIC ENHA	NCEN	IENT.	& SURVE	EY, INC. DATE: 5/20/06
	SITE INFO	RMAT	ION		SITE COORDINATES
Plant Bed ID:	Waterbody Na				Center of the Bed
Bed Size: 54.65	AC. LAKE	PU	RASA	INT	Latitude:
Substrate: 2	Waterbody ID:				Longitude:
Mari?	Total # of Spec	ies			Max. Lakeward Extent of Bed
High Organic?		Canopy	Abund	ance at Site	
	S:	N:		F:	E: Longitude:
	SPECIES INFORM	ATION			
Species Code	Abundance	QE	Vchr.	Ref. ID	Individual Plant Bed Survey
CH ? AR	13				1
POIL	12				
POCR3					
MYSP 2					1 \
POGR					1 \
PORI					1 ) 1
UTMA					
NAFL					
POPR 5					
MYVE					Travel Pattern
POPE 6					Travel Pattern
POZO					Plant Bed ID # 01
CEDE					
POAM					
SC SP.					Comments:
LYSA					11/2-8
NYTU				1	72-0
SA SP.					
AKVM					1
NULU		-2000			
TYLA					
TYAN					
REMINDER IN Substrate:	FORMATION Mari				000
	1 = Present			Canopy: 1 = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
	0 = absent		:	2 = 2-20%	1 = Species susper letter to denote specific
3 = Sand w/Silt 4 = Hard Clay	digh Organia			3 = 21-60%	2 = Genus suspected location of a species;
	High Organic I = Present		1	= > 60%	3 = Unknown referenced on attached map
	) = absent				
	Dungell Courts O-			Abundan	
	Overall Surface Cover V = Nonrooted floating			= < 2% ! = 2-20%	0 = Not Taken
	= Floating, rooted			= 2-20%	1 = Taken, not varified 2 = Taken, varified
E	= Emergent			= > 60%	- Toron, Farillo
S	= Submersed				

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Aquatic Vegeta State of India	ına Departmen				Page of
				& SURVEY, IA	1C, DATE: 5/20/06
	SITE INFO				
Plant Bed ID: / ()	Waterbody Nar				SITE COORDINATES
Bed Size: . 85 AC	LAKE	PL	EASA	NT	Center of the Bed
Substrate: 3	Waterbody ID:	10	/13/	10 1	Latitude:
Mart?		12.5			Longitude:
ligh Organic?	Total # of Spec			20.00 TOMBON	Max. Lakeward Extent of Bed
igh organior		N:		r: E:	Latitude:
SF	ECIES INFORM	ATION			Longitude:
Species Code	Abundance	QE	Vchr.	D. C. ID	
CH ? AR	)	QL	venr.	Ref. ID	Individual Plant Bed Survey
POIL V	2				~
POCR3					
MYSP 2 1/	12				
POGR V	12				
PORI	1		-		)
	2	_			
UTMA					
POPR 5	-				
MYVE					
POPE 6 V	12				Travel Patte
P020					Plant Bed ID # 01
CEDE					
POAM					
SC SP.				Comn	ents:
LYSA					
NYTU					
SA SP.					
AKVM					
NULU					
TYLA					
TYAN					
REMINDER INFOR	RMATION		C	anopy:	QE Code: Reference ID:
	resent		1	= < 2%	0 = as defined Unique number or
Silt w/Sand 0 = al Sand w/Silt	osent			= 2-20% = 21-60%	1 = Species suspe letter to denote specific
	Organic resent			= > 60%	2 = Genus suspected location of a species; 3 = Unknown referenced on attached map
Sand 0 = at					
Overa	III Surface Cover		4	Abundance: = < 2%	Voucher:
N = N	onrooted floating		2 :	= 2-20%	0 = Not Taken 1 = Taken, not varified
	pating, rooted mergent			= 21-60% = > 60%	2 = Taken, varified
	bmersed		6.	= 5,705)	

Aquatic Vegetation	on Plant B	ed D	Page of				
State of Indiana	a Department	t of Na	atural R	Resources			
ORGANIZATION: A WA	ATTIC ENHA	NCEN	1ENT.	& SURVE	EY, INC.	DATE:	
	SITE INFO	RMA	TION			SITE	COORDINATES
Plant Bed ID: / (	Waterbody Nan	ne:					iter of the Bed
Bed Size: 98,39 Ac.	LAKE	PL	RASA	ANT		Latitude:	ner of the Bed
Substrate: 3	Waterbody ID:					Longitude:	
Mari?	Total # of Spec	ies					eward Extent of Bed
High Organic?		Canop	yAbund	ance at Site	9	Latitude:	THE EXTENSION OF DEC
	S:	N:		F:	E:	Longitude:	
SPE	CIES INFORM	ATION					
Species Code /	Abundance	QE	Vchr.	Ref. ID	7	Individual Plan	t Bed Survey
CH ? AR V					1		- nou survey
POIL V	1				1	_	
POCK3					1		1
MYSP 2					1		
POGR					1	1	
PORI					1	)	
UTMA					1		
NAFL					1		
POPR 5					1	5	
MYVE					1	1	
POPE 6					1	ZIN!	Travel Pattern
POZO					1	Plant Bed ID # 01	
CEDE					1	I lant bed ib # 01	
POAM					1		
SC SP.	7.				Comments	:	
LYSA			_		1		
NYTU					1		
SA SP.					1		
ARVM				<del></del>	1		
NULU /					1		
TYLA I	7,				1		
TYAN					1		
REMINDER INFORM	MATION						
Substrate: Marl 1 = Silt/Clay 1 = Pre	esent			Canopy: 1 = < 2%		QE Code:	Reference ID:
2 = Silt w/Sand 0 = abs				1 = < 2% 2 = 2-20%		0 = as defined 1 = Species suspe	Unique number or letter to denote specific
3 = Sand w/Silt				3 = 21-60%		2 = Genus suspected	location of a species;
4 = Hard Clay High O				4 = > 60%		3 = Unknown	referenced on attached map
5 = Gravel/Rock 1 = Pre 6 = Sand 0 = abs							•
6 = Sand 0 = abs	ent			Abundan		Verseber	
Overall	Surface Cover			Abundan 1 = < 2%		Voucher:	
	nrooted floating			1 = < 2% 2 = 2-20%		0 = Not Taken	
	ating, rooted			3 = 21-60%		1 = Taken, not varified 2 = Taken, varified	
E = Em	The state of the s			4 = > 60%		= rangii, variilet	
S = Sub	omersed			N 196 (20) (20)			

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		Aquatic Vegetation Plant Bed Data Sheet Page of State of Indiana Department of Natural Resources										
		OWATIC ENHA				P.INC.	DATE: 5/201	104				
		SITE INFO	RMATIC	211022				COORDINATES				
	Plant Bed ID: /2	Waterbody Na						nter of the Bed				
	Bed Size: 8,94	M LAKE	- PUR	ASAN	T		Latitude:					
	Substrate: Z	Waterbody ID:					Longitude:					
	Mari?	Total # of Spec					Max. Lak	eward Extent of Bed				
	High Organic?		CanopyA	bundand F:	e at Site	- 0	Latitude:					
		SPECIES INFORM		F:		E: 3	Longitude:					
	Species Code			Vchr.	D-C ID							
	CH ? AR	Abdituance	QC	venr.	Ref. ID		Individual Plan	nt Bed Survey				
	POIL	/ 7-					~					
	POCR3						1					
	MYSP 2							ĺ				
nibla /	POGR											
PLNAV	PORI	/					)	1				
3	UTMA V	1										
	NAFL					4/	1					
	POPR 5						}					
	MYVE											
	POPE 6						The state of the s	Travel Pattern				
	P020						Plant Bed ID # 01					
	CEDE											
	POAM											
	SC SP.					comments:						
	LYSA											
	NYTU	4										
	SA SP.											
	ARVM											
	TYLA L	12	-	-								
	TYAN		_					1				
	REMINDER INF	NAME AND ADDRESS OF TAXABLE PARTY.										
	Control of the Contro	arl = Present		Cand 1 = <			QE Code: 0 = as defined	Reference ID:				
	2 = Silt w/Sand 0 : 3 = Sand w/Silt	= absent			-20% 1-60%		1 = Species suspe	Unique number or letter to denote specific				
		gh Organic = Present			60%	3	2 = Genus suspected 3 = Unknown	location of a species; referenced on attached map				
		= Present = absent										
	N : F =	verall Surface Cover = Nonrooted floating = Floating, rooted = Emergent		1 = < 2 = 2-	-20% 1-60%	0	/oucher: ) = Not Taken I = Taken, not varified I = Taken, variflec					
	S =	= Submersed										

ORGANIZATION	ο f Indiana	Departmen	t of Na	atural R	esources		T	-
ORGANIZATION	HOWA				e Surv	EY, INC.	DATE: 5/20/	06
	12 1	SITE INFO		TION			SITE	COORDINATES
Plant Bed ID:	1)	Naterbody Na						nter of the Bed
Bed Size:	lae.	LAKE	- PU	EASP	INT		Latitude:	
Substrate:	2 1	Vaterbody ID:					Longitude:	
Mari?	0 1	otal # of Spec	cies					eward Extent of Bed
High Organic?	1		Canopy	Abund	ance at Sit	9	Latitude:	eward Extent of Bed
	S						Longitude:	
	SPECI	ES INFORM	ATION					
Species (	Code	Abundance	QE	Vehr.	Ref. ID	7	Individual Plan	nt Rad Survey
CH ? AR						1	Thurs Idual 1 Igi	nt bed Survey
POIL		2				1	C-	
POCK 3		2				1		1
MYSP 2	2					1		. 1
POGR						1	)	
PORI							)	}
UTMA		. 2_				1		(
NAFL						1	1	( )
PUPR 5						-	(	
MYVE						1	(	
	-					-	Giv.	Travel Pati
POPE 6	-					ļ	/	Thursday and
POZO			-	-			Plant Bed ID # 01	
POAM								
SC SP.						0		
						Comments:		
LVSA	/	4						
NYTU	V	3	_					
SA SP.			-	-				
AKVM								
TYLA			-					
TYAN			-					
REMINDER	INFORMA	TION						
Substrate: 1 = Silt/Clay 2 = Silt w/Sand 3 = Sand w/Silt 4 = Hard Clay 5 = Gravel/Rock 6 = Sand	Mari 1 = Presen 0 = absent High Orga 1 = Presen 0 = absent	nic t		1 2 3	anopy: = < 2% = 2-20% = 21-60% = > 60%	1	QE Code:  D = as defined  = Species suspe  2 = Genus suspected  = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached may
3810		rface Cover eted floating g, rooted		3 :	Abundanc = < 2% = 2-20% = 21-60% = > 60%	0	oucher: = Not Taken = Taken, not varified = Taken, varifiec	

	Aquatic Vegetation	Aquatic Vegetation Plant Bed Data Sheet										
	State of Indiana	a Department	of Natural R	esources			Page of					
	ORGANIZATION: A WA	ATTIC ENHAN	CEMENT	& SURVE	Y, INC.	DATE: 5/20/	16					
		SITE INFOR	MATION			1	COORDINATES					
	Plant Bed ID: 14	Waterbody Name		770-10		10.00	nter of the Bed					
	Bed Size: , 3 A t	LAKE	PURASA	NT		Latitude:						
	Substrate: 2	Waterbody ID:				Longitude:						
	Mart?	Total # of Species	S			Max. Lak	eward Extent of Bed					
	High Organic?		nopyAbunda			Latitude:						
	- CDE	1.0		F:	E: Z_	Longitude:						
	Species Code	Abundanas			1	,						
	CH ? AR V	Abundance	QE Vchr.	Ref. ID	1	Individual Plan	nt Bed Survey					
	POIL /	1			1	$\sim$						
Porte	POCR3	2			1	1						
PORAV	MYSP2 V	3										
PONAV	POGR			-								
1	PORI					)	- 1					
	UTMA											
	NAFL				)							
	POPR 5					}	11/2					
	MYVE V	2				Givi	Townson					
	POPEG			11 fee /		The state of the s	Travel Pattern					
	P020	/				Plant Bed ID # 01						
	CEDE											
_	POAM V	2										
	SCSP.	2			Comments:							
	LYSA											
	NYTU V	2	$\rightarrow$									
	SA SP.											
	ARVM											
	TYLA	2,	+									
	TYAN											
	REMINDER INFORM	ATION										
	1 = Silt/Clay 1 = Pres			anopy: = < 2%		QE Code: 0 = as defined	Reference ID: Unique number or					
	2 = Silt w/Sand 0 = abse 3 = Sand w/Silt	ent		= 2-20% = 21-60%	•	1 = Species susp∈ 2 = Genus suspected	letter to denote specific					
	4 = Hard Clay High Ord 5 = Gravel/Rock 1 = Pres		4	= > 60%	3	3 = Unknown	location of a species; referenced on attached map					
	6 = Sand 0 = abse			10 · 10 · 10 · 10 · 10 · 10 · 10 · 10 ·								
		Surface Cover	1	Abundance = < 2%		/oucher: ) ≃ Not Taken						
		ooted floating ing, rooted		= 2-20% = 21-60%	1	1 = Taken, not varified 2 = Taken, varifie						
	E = Emer S = Subn			= > 60%		andii, variiie						
Į.							8					

Aquatic Vege	etatio	n Plant E	Bed D	ata S	heet	
1		Departmen		Page of		
		1C ENHA				Y. INC. DATE: + /2 NOV
		SITE INFO			. 30.11	7 7
Plant Bed ID: /	/ V	Vaterbody Na		ION		SITE COORDINATES
Bed Size: 6.93	) C	LAKE	PL	FASA	ATT	Center of the Bed
Substrate: 7			10	ich sh	101	Latitude:
Mari?		Vaterbody ID:	1			Longitude:
High Organic?		otal # of Spec		Λbund		Max. Lakeward Extent of Bed
<u> </u>	s		N:		ance at Sit	E.
	SPECI	ES INFORM	ATION			Longitude:
Species Code		Abundance	QE	Vchr.	Ref. ID	1
CH ? AR		7		rem.	Kel. ID	Individual Plant Bed Survey
POIL	1	2				~
	/	2			103:11-13	
MYSP 2	/	7-			·	
POGR						
PORI						) )
UTMA						
NAFL						
POPR 5						
MYVE						
POPE 6						Travel Pattern
POZO						Plant Red ID # 04
CEDE						Plant Bed ID # 01
POAM						
SC SP.						Comments:
LYSA			-	-		Comments;
NYTU						1 13
SA SP.				_		
ARVM				_		
NULU						
TYLA						
TYAN						
REMINDER INF	ORMA1	ION		-	anopy:	OF Code
= Silt/Clay 1	= Present			1	= < 2%	QE Code: Reference ID: 0 = as defined Unique number or
= Sand w/Silt	- ausent				= 2-20% = 21-60%	1 = Species suspected letter to denote specific location of a species:
	igh Orga = Presen				= > 60%	3 = Unknown referenced on attached map
	= absent				10 <u>4</u> 04 <del>20</del> 0000000000000000000000000000000000	
01	verall Su	rface Cover		1:	Abundand < 2%	Voucher: 0 = Not Taken
		ted floating		2 =	= 2-20%	1 = Taken, not varified
E :	= Floating = Emerge	ent			= 21-60% = > 60%	2 = Taken, varified
S	= Subme	rsed			5 5 7 18 July 1997	9

Aquatic Veget	ation Plant E	ed [	ata S	heet			
	liana Departmen				Page of		
ORGANIZATION: A	QUATIC ENHA	WCE	UENT	& SURVE	, INC. DATE: 5/20/06		
	SITE INFO						
Plant Bed ID: / C	Waterbody Na	ne:			SITÉ COORDINATES		
Bed Size: 3,97	LAKE	PL	RASA	NT	Center of the Bed		
Substrate: 2	Waterbody ID:		7.07	10.1	Latitude:		
Marl? 6	Total # of Spec	ine			Longitude:		
High Organic?			νΔhunda	ance at Site	Max. Lakeward Extent of Bed		
		N:			Latitude:		
	SPECIES INFORM	ATION			Longitude:		
Species Code	Abundance	QE	Vehr.	Ref. ID	To History and State of Control		
CH ? AR 1	2		veni.	Kei. ID	Individual Plant Bed Survey		
POIL					$\sim$		
POCR3	12						
ALVER 3	1						
POGR							
PORI		_			)		
UTMA							
NAFL		-					
POPR 5							
MYVE	-	-					
					Travel Pattern		
POPE 6		-					
POZO CEDE		7077			Plant Bed ID # 01		
POAM			-				
SC SP.			-	-	comments;		
LYSA	_		-	———			
					13-18		
SA SP.							
ARVM		-	-				
NULU	+	-					
TYLA		$\neg$					
TYAN		$\rightarrow$	_				
REMINDER INFO							
	rl Present absent		1	anopy: = < 2% = 2-20%	QE Code: Reference ID: 0 = as defined Unique number or		
= Sand w/Silt = Hard Clay Hig	h Organic		3	= 21-60%	1 = Species suspected letter to denote specific location of a species;		
= Gravel/Rock 1 =	Present		4	= > 60%	3 = Unknown referenced on attached map		
= Sand 0 =	absent			Abundance:	Venet		
	erall Surface Cover			= < 2%	Voucher: 0 = Not Taken		
	Nonrooted floating Floating, rooted			2-20% 21-60%	1 = Taken, not varified		
E =	Emergent Submersed			> 60%	2 = Taken, varifler		
3-	Commersed				9		

Aquatic Vege	tation Plant B	ed D	ata SI	heet	Page For
	diana Department				rage <u>114</u> 01
	AWATIC ENHA				Y, INC. DATE: 5/20/06
	SITE INFO				SITE COORDINATES
Plant Bed ID: 2	Waterbody Nan	ne:			Center of the Bed
Bed Size: 15.80	1 1./-	PU	EASA	NT	Latitude:
Substrate: 2	Waterbody ID:	eret e			Longitude:
Mart?	Total # of Speci	es			Max. Lakeward Extent of Bed
High Organic?		anop	yAbunda	ance at Site	Latitude:
	S:	N:		F:	E: Longitude:
	SPECIES INFORMA	ATION			
Species Code	Abundance	QE	Vehr.	Ref. ID	Individual Plant Bed Survey
CH ? AR	3				
POIL					
POCK3				-	
MYSP 2					
POGR					\
PORI					
UTMA					
NAFL PUPR 5					
MYVE		_			Travel Pattern
POPE 6					
P020					Plant Bed ID # 01
POAM	-				
SC SP.			-		Comments:
LYSA		_			15/2/1
NYTU		_			18-26' Chaux downto 25'
SA SP.					ah 1 . + 2-1
ARVM					CHANA GOWNTO LS
NULU					
TYLA					
TYAN					
	FORMATION Mari		C	anopy:	QE Code: Reference ID:
	= Present = absent		1	= < 2%	0 = as defined Unique number or
3 = Sand w/Silt				= 2-20% = 21-60%	1 = Species suspected letter to denote specific 2 = Genus suspected location of a species;
5 = Gravel/Rock 1	igh Organic = Present		4	= > 60%	3 = Unknown referenced on attached map
	= absent			A.L.	
	verall Surface Cover			Abundance = < 2%	e: Voucher: 0 = Not Taken
	= Nonrooted floating = Floating, rooted			= 2-20% = 21-60%	1 = Taken, not varified 2 = Taken, varifier
E	= Emergent = Submersed			= > 60%	a – randii, variilot
3	Guomer sed				ž.

	Aquatic Vegetati	a Department	of Natural I	Resources		Page <u>7</u> of		
	ORGANIZATION: A &W	ATTIC ENHA	VCEMENT	& SURVE	Y, INC.	DATE: 5/19/06		
		SITE INFO	The state of the s			SITE COORDINATES  Center of the Bed		
	Plant Bed ID: CH	Waterbody Nam						
	Bed Size: 8,54C	LAKE	PURAS	ANT		Latitude:		
	Substrate: 2	Waterbody ID:				Longitude:		
	Mari?	Total # of Specie	es			Max. Lakeward Extent of Bed		
	High Organic?	С	anopyAbuno	lance at Site		Latitude:		
		S: N	ł:		E: 4	Longitude:		
	SPE	CIES INFORMA	TION		1	gradu.		
2	Species Code	Abundance	QE Vchr.	Ref. ID	1 NC. W	/ETパー) Individual Plant Bed Survey		
13	CH ? AR V	2				That is dear Survey		
	POIL					C		
	POCR3 V	3						
	MYSP2V	3				<u> </u>		
	POGR V	2				\		
	PORIL					)		
	UTMA V	2						
	NAFL		_					
	POPR 5		_					
	MYVE V	2	_					
	POPE 6 V	2	_			Travel Pattern		
	POZO		-					
	CEDE					Plant Bed ID # 01		
	POAM	2						
_		2	_		Commonto.			
)			_		Comments:	_		
V2	LVSA	2	_			MYSP & POCR THICK &		
2	NYTU	2						
	SA SP.	-				NEAR SURFACE SOUTH		
) )	ARVM	2				OF THE BRIDGE		
(	TYLA V	2						
	TYAN	2						
	REMINDER INFORM	ATION						
	Substrate: Marl 1 = Sill/Clay 1 = Pres			Canopy: = < 2%		QE Code: Reference ID: D = as defined Unique number or		
	2 = Silt w/Sand 0 = abset 3 = Sand w/Silt	ent		= 2-20% = 21-60%		1 = Species suspe		
	4 = Hard Clay High Or 5 = Gravel/Rock 1 = Pres			= > 60%	3	2 = Genus suspected location of a species; 3 = Unknown referenced on attached map		
	5 = Gravel/Rock 1 = Pres 6 = Sand 0 = abse							
	Overall	Surface Cover	25	Abundance		oucher:		
	N = None	ooted floating		= < 2% = 2-20%		= Not Taken = Taken, not varified		
	F = Float E = Eme	ing, rooted rgent		= 21-60% = > 60%		□ Taken, varifier		
	S ≈ Subr			-0.70				

	Aquatic Vegetati							Page <u>6</u> of
	State of Indian	a Departmen	t of Na	atural R	esources			-1
	ORGANIZATION: A &	ATIC ENHA	WCEN	1ENT.	a Surve	EY, INC.	DATE: 5/19	106
		SITE INFO		TION			SITE	COORDINATES
	Plant Bed ID: CH 2	Waterbody Na		V2002017.7m			Ce	nter of the Bed
	Bed Size: .63 ACI	LAKE	- PU	EASP	NT		Latitude:	
	Substrate: 3	Waterbody ID:					Longitude:	
	Mari?	Total # of Spec	ies				Max. Lak	eward Extent of Bed
	High Organic?			Abund	ance at Site	9	Latitude:	
			N:		F:	E: \	Longitude:	
	1-12-2-1	CIES INFORM	ATION			, ,		
HORNED P.W.	Species Code CH ? AR	Abundance 2	QE	Vehr.	Ref. ID	1	Individual Plan	nt Bed Survey
1 2	POIL V	i				1	~	
	POCR3 V	2				1		
	MYSP2 V	3				1		
	POGR V	2				1		
	PORI	1					)	1
	UTMA					1		
	NAFL					1	1	
	POPR 5					1	}	2110
	MYVE V	2				1	City	
	POPE 6 V	2				1	Year of the second	Travel Pattern
	POZO					1 ,	Plant Bed ID # 01	
	CEDE							
_	POAM							
	SC SP.					Comments:		
	LYSA							
	NYTV							
	SA SP.							
POCH -1	AKVM							1
	NULU		_					
-	TYLA		-	_				
+	TYAN REMINDER INFORM	ATION						
	Substrate:         Marl           1 = Silt/Clay         1 = Pres           2 = Silt w/Sand         0 = abse           3 = Sand w/Silt         High Or           4 = Hard Clay         High Or           5 = Gravel/Rock         1 = Pres	sent ent ganic ent		1 2 3	anopy: = < 2% = 2-20% = 21-60% = > 60%	1	QE Code:  D = as defined  I = Species suspe  2 = Genus suspected  I = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map
	Overall N = Non	Surface Cover rooted floating ting, rooted floating ting, rooted		3	Abundanc = < 2% = 2-20% = 21-60% = > 60%	0	oucher: = Not Taken = Taken, not varified = Taken, varified	- Can

Aquatic Vegetatio  State of Indiana							Page 5 of	
ORGANIZATION: A GWA	TIC ENHA	MICEA	AFATT	L CURY	EN LUC	DATE: 5	1,0/01	
				X JUNY	ET, INC.	DATE: 5/19/06		
CH2	SITE INFO Waterbody Nar		ION			SITE	COORDINATES	
lant Bed ID: C(1)		Ce	enter of the Bed					
Bed Size: 77 ACI	LAKE	- PU	KH JA	NI		Latitude:		
	Waterbody ID:					Longitude:		
	Total # of Spec	ies				Max. Lak	keward Extent of Bed	
igh Organic?				ance at Sit	е	Latitude:		
		N:		F:	E:	Longitude:		
	IES INFORM	ATION			_			
	Abundance	QE	Vehr.	Ref. ID		Individual Pla	nt Bed Survey	
CH ? AR	4					_		
POIL V	1					1		
POCR3	2						)	
MYSP2 V	2					_		
POGR ~	2				1	/		
PORIL	2				1	)	1	
UTMA					1		_	
NAFL					1	1		
POPR 5					1	1		
MYVEL	2				1	1	Travel Pattorn	
POPE 6 V	2	-			1	Z'\i	Travel Pattern	
POZO		-	7					
CEDE		-	-		,	Plant Bed ID # 01		
POAM I								
SC SP.					Comments:			
LYSA		-	-		Comments:			
		-						
SA SP.	-!							
		-						
ARVM		-						
TYLA		-						
TYAN		-	_					
REMINDER INFORMA	TION							
ostrate: Marl				anopy:		E Code:	Reference ID:	
Silt w/Sand 0 = absent				= < 2% = 2-20%		= as defined = Species susp∈	Unique number or	
Sand w/Silt Hard Clay High Orga	anta.		3 =	= 21-60%		2 = Genus suspected	letter to denote specific location of a species;	
Hard Clay High Orga Gravel/Rock 1 = Preser			4 =	= > 60%	3	= Unknown	referenced on attached map	
Sand 0 = absent								
Overall Su	rface Cover		1 =	Abundanc		oucher:		
N = Nonroc	oted floating		2 =	2-20%		= Not Taken = Taken, not varified		
F = Floating E = Emerge				21-60%		= Taken, varifier		
S = Subme			4 =	> 60%				

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	INTO FAIR					T 7.7		
i i d	VATIC ENHA			& SUKVE	P, INC.	DATE: 5/19/	06	
011.1	SITE INFO		ION			SITE	COORDINATES	
Plant Bed ID: CH 4						Ce	nter of the Bed	
Bed Size: 98	LAKE	- PU	EASA	INT		Latitude:		
Substrate: 3	Waterbody ID:					Longitude:		
Mart?	Total # of Spec	cies				Max. Lak	seward Extent of Bed	
High Organic?		Canopy	Abunda	ance at Site	)	Latitude:	TOWARD EXTERN OF DEG	
	S:	N:		F:	E: 21	Longitude:		
SF	PECIES INFORM	ATION						
Species Code	Abundance	QE	Vchr.	Ref. ID	1	Individual Pla	nt Bed Survey	
CH ? AR V	2				1	Individual I la	int Bed Survey	
POIL				- 8	1	~		
POCR3 V	1				1			
MYSP 2 /	3				1			
POGR					1			
PORI					1	)	}	
UTMA					-		{	
							( )	
NAFL PURS	-					(		
	-					1		
MYVE V	2					Giri	Tourish	
POPE 6 V	3						Travel Patt	
P020					ı	Plant Bed ID # 01		
CEDE								
POAM								
SCSP.					Comments:			
LYSA					1 1	(1)	. /	
NYTU	2				1/5	KY WIN	DY/CLOUDY	
SASP. V	1							
AKVM					$\leq$ r	ECHH) 2	22/~	
NULU					OF	-UITH /	23.6FT	
TYLA								
TYAN								
REMINDER INFOR	RMATION			A.C. (1975)		Manager of the		
1 = Silt/Clay 1 = P	resent			anopy: = < 2%		QE Code: 0 = as defined	Reference ID: Unique number or	
2 = Silt w/Sand 0 = a 3 = Sand w/Silt	bsent			= 2-20% = 21-60%	1	I = Species susp€	letter to denote specific	
	Organic			= > 60%		2 = Genus suspected 3 = Unknown	location of a species; referenced on attached map	
5 = Gravel/Rock $1 = P6 = Sand$ $0 = ai$	resent osent							
				Abundance	9: V	oucher:		
	all Surface Cover onrooted floating			= < 2% = 2-20%		= Not Taken = Taken, not varified		
F=FI	oating, rooted		3 :	= 21-60%		<ul> <li>Taken, not varified</li> <li>Taken, varified</li> </ul>		
	nergent ubmersed		4 :	= > 60%				

Aquatic Vegetati State of Indian							Page <u>3</u> of _		
ORGANIZATION: A &W	ATTC ENH	ANCEN	LENT	& SURVI	EY, INC.	DATE:			
	SITE INFO				7,7,7	SITE	COORDINATES		
Plant Bed ID: CH 5	Waterbody Na					SITE COORDINATES			
Bed Size: .46	LAKE	= PU	EASA	NT			inter of the Bed		
Substrate: 3	Waterbody ID:			.,.		Latitude:			
Marl?	Total # of Spec					Longitude:			
High Organic?			Ahund	ance at Site			seward Extent of Bed		
	S:	N:	111	F:	E: 2	Latitude:			
SPE	CIES INFORM	ATION			-	Longitude:			
Species Code	Abundance		Vehr.	Ref. ID	7	Individual Di-	P 10		
CH ? AR V	3				1	Individual Pla	nt Bed Survey		
POIL V	2				1	~			
POCR3					1	1	1		
MYSP 2 V	2				1				
POGR					1				
PORI					1	)	)		
UTMA					1				
NAFL					1	1			
POPR 5					1	(	1110		
MYVE V	2				1	1			
POPE 6V	3						Travel Pattern		
POZO						Plant Bed ID # 01			
CEDE						Idin Ded ID # 01			
POAM									
SC SP.				-	Comments:				
LYSA					6.				
NYTU ~									
SA SP.									
ARVM							₽		
NULU									
TYLA V									
TYAN REMINDER INFORM	ATION								
ibstrate: Mari			С	anopy:	0	E Code:	Poloron - ID		
= Silt/Clay 1 = Pres = Silt w/Sand 0 = abse			1	= < 2% = 2-20%	0	= as defined	Reference ID: Unique number or		
Sand w/Silt			3	= 21-60%		= Species susp∈ 2 = Genus suspected	letter to denote specific location of a species;		
Gravel/Rock 1 = Pres			4	= > 60%		= Unknown	referenced on attached map		
Sand 0 = abse	ent			Abrond		Section 2 to the contract			
	Surface Cover		1:	Abundance = < 2%		oucher: = Not Taken			
	rooted floating ting, rooted			= 2-20% = 21-60%	1 =	= Taken, not varified			
E = Eme				= > 60%	2 =	Taken, varifled			

Aquatic Veget							Page 2 of		
	iana Departmen WATIC ENH				7	In			
- 11				X DUN VE	er, INC.	DATE:			
Cu I	SITE INFO		TION			SITE	COORDINATES		
Plant Bed ID: CH 6	. A.	- Di	CACA			Center of the Bed			
Bed Size: 165 (	to LAIN	- PU	KH JP	INI		Latitude:			
Substrate: 3	Waterbody ID:			Longitude:					
0	Total # of Spec	cies				Max. Lakeward Extent of Bed			
High Organic?	S:	Сапор		ance at Site		Latitude:			
				F:	E:	Longitude:			
	PECIES INFORM				7				
Species Code	Abundance	QE	Vchr.	Ref. ID	4	Individual Pla	nt Bed Survey		
POIL POIL	2				-	$\bigcirc$			
	2	-			-	1			
POCR3 V					-		1		
MYSP 2 V	3				1				
POGR						1			
PORI						/			
UTMA									
NAFL						1			
POPR 5						{			
MYVE					1	City			
POPE 6 L	T					The state of the s	Travel Pattern		
P020						Plant Bed ID # 01			
CEDE									
POAM									
SCSP. L	)				Comments:				
LYSA					INA	TER TEMP	100		
NYTU ~	1				V 1/1	120- I EMP	62		
SASP. V	1								
ARVM									
NULU									
TYLA									
TYAN									
REMINDER INFO			С	anopy:		QE Code:			
	Present absent		1	= < 2%	0	= as defined	Reference ID: Unique number or		
Sand w/Silt			3	= 2-20% = 21-60%		= Species susp€ 2 = Genus suspected	letter to denote specific location of a species;		
= Gravel/Rock 1 = I	n Organic Present		4	= > 60%	3	= Unknown	referenced on attached map		
	absent								
	rall Surface Cover		1	Abundance = < 2%		oucher: = Not Taken			
	Nonrooted floating loating, rooted		2 :	= 2-20% = 21-60%	1	= Taken, not varified			
E = E	Emergent			= > 60%	2	⇒ Taken, varifier			
2 = 5	Submersed						8		

# Appendix B Tier I Data Sheets 8/06

Aquatic Vegeta	tion Plant B	ed D	ata Si	neet			Pageof
	ana Department						J
	WATTC ENHA				Y, INC.	DATE: 8/3/04	2
	SITE INFO						COORDINATES
Plant Bed ID:	Waterbody Nan	ne:					ter of the Bed
Bed Size:	LAKE	PU	EASA	NT		Latitude:	ter of the bed
Substrate: 3	Waterbody ID:					Longitude:	
Mart?	Total # of Spec	es	45	2 E			ward Extent of Bed
High Organic?	Control of the Contro		Abunda	ance at Site	,	Latitude:	ward Extent of Ded
		N:		F:	E:	Longitude:	
S	PECIES INFORM	ATION					CICIAN IMPII CONTRACTOR
Species Code	Abundance	QE	Vehr.	Ref. ID	]	Individual Plan	t Bed Survey
CH ? AR					1	_	
POIL	1					~	
POCR3					]		)-
MYSP 2	-					5	
POGR					1	\	
PORI						)	1
UTMA					1		
NAFL					1	1	
POPR 5					1	}	1112
MYVE					1	Carrie I	
POPE 6	3				1	Year of the second	Travel Pattern
POZO					1	Plant Bed ID # 01	
CEDE	3				1		
POAM							
SC SP.	2				Comments	:	
LYSA					1		
NYTU	2				1		
SA SP.							
AKVM							
NYLU							
TYLA							
TYAN REMINDER INFO	DRMATION.						4.40
Substrate: Ma	ri			Сапору:		QE Code:	Reference ID:
	1 = Present 1 = < 2%			0 = as defined 1 = Species suspe	Unique number or		
3 = Sand w/Silt	5327 532		;	3 = 21-60%		2 = Genus suspected	letter to denote specific location of a species;
5 = Gravel/Rock 1 =	nh Organic Present			4 = > 60%		3 = Unknown	referenced on attached map
6 = Sand 0 =	absent			Abundan	ce.	Voucher:	
100	erall Surface Cover			1 = < 2%		0 = Not Taken	
	Nonrooted floating Floating, rooted			2 = 2-20% 3 = 21-60%		1 = Taken, not varified 2 = Taken, varified	
The state of the s	Emergent Submersed		4	4 = > 60%		200 mm : 1 100 mm (100 mm) 100 mm (100 mm) 100 mm)	
	- John Guy						

State of Inc	liana Department	of Na	tural R	esources	Page of
	QUATIC ENHA				INC. DATE:
	SITE INFO				SITE COORDINATES
Plant Bed ID:	Waterbody Nan				Center of the Bed
Bed Size:	LAKE	PU	EASA	NT	
Substrate: 3	Waterbody ID:				Latitude:
Mari?	Total # of Speci	ine.	46		Longitude:
High Organic?		12127	( )		Max. Lakeward Extent of Bed
riigh Organic?	1 1	vanopy N:		nce at Site	Latitude:
	SPECIES INFORMA				Longitude:
Species Code		1-1/1-1	T		
CH ? ARV	Abundance	QE	Vehr.	Ref. ID	Individual Plant Bed Survey
POIL	3				$\cap$
POCR3 MYSP2					
POGR					1
UTMA					
NAFL					
PUPR 5					
MYVE					
POPE GV	2				Travel Pattern
POZO					Plant Bed ID # 01
CEDE					
POAM					
SCSP.					omments;
LYSA					
NYTU					
SA SP.					
ARVM					
NULU					
TYLA					
TYAN					
REMINDER INF					
	arl = Present			anopy: = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
The state of the s	= absent		2	= 2-20%	1 = Species suspe
= Hard Clay Hi	gh Organic			= 21-60% = > 60%	2 = Genus suspected location of a species;
= Gravel/Rock 1	= Present = absent		1.5		3 = Unknown referenced on attached map
C DESIGNATION DESIGNATION OF THE PERSON OF T				Abundano	Voucher:
	verall Surface Cover = Nonrooted floating			= < 2%	0 = Not Taken
F	= Floating, rooted		3	= 2-20% = 21-60%	1 = Taken, not varified 2 = Taken, varifier
	= Emergent = Submersed		4	= > 60%	

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	Agustia Vagatati	an DiamA D	- d D	4- 01				
	Aquatic Vegetati							Page of
		ATTC ENHA				INC.	DATE:	-
	-	SITE INFO					SITE	COORDINATES
	Plant Bed ID: 2	Waterbody Nan		in and				ter of the Bed
	Bed Size:	LAKE	PLE	ASA	NT		Latitude:	tor or the bed
	Substrate: 3	Waterbody ID:					Longitude:	
	Mari?	Total # of Speci	ies (	25				ward Extent of Bed
	High Organic?	(	Canopy A	Abunda	nce at Site		Latitude:	
		S:	N:		F: E	i:	Longitude:	
	SPI	ECIES INFORMA	ATION					
VAAM 2	Species Code	Abundance	QE	Vehr.	Ref. ID		Individual Plan	t Bed Survey
MAMINUC	CH ? AR V	+ 3					$\sim$	
	POIL V	13					1	
	POCK3							
	POGRV	3						
	PORI	2	-				)	
	UTMA	+	-					
	NAFL							
	POPR 5	-	-				(	11/17
	MYVE	+						
	POPE 6V	2	-					Travel Pattern
	POZO		-+				Plant Bed ID # 01	
	CEDE		$\neg$					
	POAM							
	SC SP.				C	Comments	:	
	LYSA					000	DINA A. CHA	TAO 71.45
	NYTU					1414	RINA & SUP	HWNIAGE
	SA SP.							
	AKVM							
	NULU							
	TYLA		_					
	REMINDER INFOR	RMATION						•
	Substrate: Marl 1 = Sitl/Clay 1 = P 2 = Sitl w/Sand 0 = at 3 = Sand w/Sitl 4 = Hard Clay High	resent beent Organic resent		1 2 3	Canopy: 1 = < 2% 2 = 2-20% 3 = 21-60% 4 = > 60%		QE Code: 0 = as defined 1 = Species suspe 2 = Genus suspected 3 = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map
	N = N F = FI E = E	all Surface Cover onrooted floating loating, rooted mergent ubmersed		3	Abundance = < 2% = 2-20% = 21-60% = > 60%		Voucher: 0 = Not Taken 1 = Taken, not varified 2 = Taken, varified	

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Aquatic Vegetation Plant Bed Data Sheet Page \_\_ of \_ State of Indiana Department of Natural Resources A QUATIC ENHANCEMENT & SURVEY, INC. DATE: SITE INFORMATION SITE COORDINATES Waterbody Name: Plant Bed ID: Center of the Bed LAKE PLEASANT 30 Ac. Bed Size: Latitude: Substrate Waterbody ID: Longitude: 0 Marl? Total # of Species Max. Lakeward Extent of Bed High Organic? Canopy Abundance at Site Latitude: E: Longitude: SPECIES INFORMATION Species Code Abundance QE Vchr. Ref. ID Individual Plant Bed Survey CH ? AR' 3 POIL POCK 3 MYSP 2 POGR PORI 3 UTMA NAFL PUPR 5 MYVE Travel Pattern POPE 6 2 P020 Plant Bed ID # 01 CEDE POAM SC SP. Comments: LYSA NYTU SA SP. ARVM NULU TYLA TYAN REMINDER INFORMATION Substrate: Marl Canopy: QE Code: Reference ID: 1 = Sill/Clay 1 = Present 1 = < 2% 0 = as defined Unique number or 2 = Silt w/Sand , 0 = absent 2 = 2-20%1 = Species suspe letter to denote specific 3 = Sand w/Silt 3 = 21-60% 2 = Genus suspected location of a species; 4 = Hard Clay High Organic 4 = > 60% 3 = Unknown referenced on attached map 5 = Gravel/Rock 1 = Present 6 = Sand 0 = absent Abundance: Voucher: Overall Surface Cover 1 = < 2% 0 = Not Taken N = Nonrooted floating 2 = 2-20% 1 = Taken, not varified F = Floating, rooted 3 = 21-60% 2 = Taken, varifled E = Emergent 4 = > 60% S = Submersed

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**Aquatic Vegetation Plant Bed Data Sheet** Page \_\_\_ of \_\_ State of Indiana Department of Natural Resources A QUATIC ENHANCEMENT & SURVEY, INC. ORGANIZATION: DATE: SITE INFORMATION SITE COORDINATES Waterbody Name: Plant Bed ID: Center of the Bed LAKE PLEASANT Bed Size Latitude: Waterbody ID: Substrate: Longitude: Marl? Total # of Species Max. Lakeward Extent of Bed High Organic? CanopyAbundance at Site Latitude: E: Longitude: SPECIES INFORMATION Species Code Abundance Vehr. Ref. ID Individual Plant Bed Survey 4 CH ? ARL POIL 2 POCK 3 MYSP 2 POGR PORIL UTMA NAFL PUPR 5 MYVE Travel Pattern POPE 6 POZO Plant Bed ID # 01 CEDE POAM SCSP. Comments: LYSA 8'-13' EAST NYTU SA SP. ARVM NULU TYLA TYAN REMINDER INFORMATION Substrate: Marl Canopy: QE Code: Reference ID: 1 = Sill/Clay 1 = Present 1 = < 2% 0 = as defined Unique number or 2 = Silt w/Sand , 0 = absent 2 = 2-20% 1 = Species suspe letter to denote specific 3 = Sand w/Silt 3 = 21-60% 2 = Genus suspected location of a species; 4 = Hard Clay High Organic 4 = > 60% 3 = Unknown referenced on attached map 5 = Gravel/Rock 1 = Present 6 = Sand 0 = absent Abundance: Voucher: Overall Surface Cover 1 = < 2% 0 = Not Taken N = Nonrooted floating 2 = 2-20% 1 = Taken, not varified F = Floating, rooted 3 = 21-60% 2 = Taken, varifled E = Emergent 4 = > 60% S = Submersed

State of India	ana Department				Page of
ORGANIZATION: A 6			tulai K	esources	
	WATIC ENHA	NCEN	ENTA	SURVE	INC. DATE:
	SITE INFO				SITE COORDINATES
Plant Bed ID:	Waterbody Nan				Center of the Bed
Bed Size:	LAKE	PU	EASA	NT	Latitude:
Substrate: 2	Waterbody ID:				Longitude:
Mari?	Total # of Speci	ies			Max. Lakeward Extent of Bed
High Organic?			Abunda	nce at Site	Latitude:
		N:		F:	: Longitude:
S	PECIES INFORM	ATION			Longitude.
Species Code	Abundance	QE	Vehr.	Ref. ID	Individual Plant Bed Survey
CH ZAR V	12				That the but they
POIL	. 1			9	
POCK3.					
MYSP 2				***************************************	
POGR					
PORI					)
UTMA					
NAFLL	1,-				
POPR 5	1				
MYVE					
POPE 6					Travel Pattern
POZO					Plant Bed ID # 01
CEDE					Fiant Bed ID # 01
POAM					
SC SP.			-		omments:
LYSA					
NYTU					13'-18 EAST
SA SP.			-		0 10 8131
ARVM					
NULU					
TYLA					
TYAN					
REMINDER INFO					
	Present			anopy: = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
2 = Silt w/Sand , 0 = 3 = Sand w/Silt	absent			= 2-20%	1 = Species suspe letter to denote specific
4 = Hard Clay Hig	h Organic			= 21-60% = > 60%	2 = Genus suspected location of a species; 3 = Unknown referenced on attached man
5 = Gravel/Rock 1 =	Present				3 = Unknown referenced on attached map
6 = Sand 0 =	absent			Abundano	Vougher:
Ove	erall Surface Cover		1	= < 2%	voucher: 0 = Not Taken
	Nonrooted floating			= 2-20%	1 = Taken, not varified
	Floating, rooted Emergent			= 21-60% = > 60%	2 = Taken, variflet
	Submersed			30.10	Ψ.

	Aquatic Vegetat	tion Plant Bed					Pageof	
	ORGANIZATION: A &	JAMC ENHANCE	FMFATT	L CURY	N INC	DATE:		
		SITE INFORM		Z JVIVIE	T, (NC)	-		
	Plant Bed ID: 5	Waterbody Name:	ATION				COORDINATES	
	1	LAKE F	(FASI	ArT			nter of the Bed	
	Bed Size: Substrate: 'Z	Control of the Contro	VICH ST	1101		Latitude:		
	Mari?	Waterbody ID:	95	40		Longitude:		
	High Organic?	Total # of Species		4E		Max. Lak	keward Extent of Bed	
	riigii Organici	S: N:	opyAbund	ance at Site	E: 3	Latitude:		
	SP	ECIES INFORMATION		<u> </u>	E. )	Longitude:		
4	Species Code	Abundance Q		D.C.ID	٦			
14AM- 1 STAR-6- 2	CH ? AR	3	E Vehr.	Ref. ID	1	Individual Pla	nt Bed Survey	
itAR-6~ 2	POIL	12	_		1	~		
	POCK3	+ -	+		-			
	MYSP 2V				+			
	POGRV	1	+		1			
	PORI	+	_		1	)	***	
	UTMA		+		1			
	NAFLL	2	-		1	1		
	POPR 5		-		1			
	MYVE		+-		1			
	POPE GV	2	-		-		Travel Pattern	
	POZO	-	-		-			
	CEDE		+		-	Plant Bed ID # 01		
	POAM		-		1			
m	SC SP.	-	+		Comments	,		
2000 V	LYSAL	+	+					
420.0	NYTU		-		"L"	CHANNEL	VEAR SE CORVER	
	SA SP.		-					
	ARVM		+					
	NULU		+					
	TYLA							
	TYAN							
	REMINDER INFO	RMATION						
	2 = Silt w/Sand , 0 = a 3 = Sand w/Silt 4 = Hard Clay High	organic		Canopy: 1 = < 2% 2 = 2-20% 3 = 21-60% 4 = > 60%		QE Code: 0 = as defined 1 = Species suspe 2 = Genus suspected 3 = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map	
				Abundan	ce:	Voucher:		
	N = N F = FI E = E	all Surface Cover lonrooted floating loating, rooted mergent ubmersed	3	! = < 2% ! = 2-20% ! = 21-80% ! = > 60%		0 = Not Taken 1 = Taken, not varified 2 = Taken, varified		
	247.0377	A CONTRACTOR OF THE PARTY OF TH					£.	

	State of Indian						Page of		
	ORGANIZATION: A &	ATIC ENHA	NCEP	IENT	k Survet	, INC.	DATE:		
		SITE INFO		ION			SITE COORDI	NATES	
	Plant Bed ID:	Waterbody Nar					Center of th		
	Bed Size:	LAKE	- PU	EASA	NT		Latitude:		
	Substrate:	Waterbody ID:					Longitude:		
	Marl?	Total # of Spec	ies	75	IE		Max. Lakeward E	ytent of Red	
	High Organic?			Abunda	ance at Site		Latitude:	Atent of Bed	
		William Street, and the Street, Street	N:			E:	Longitude:		
	SPE	CIES INFORM	ATION			,		-	
. 0	Species Code	Abundance	QE	Vchr.	Ref. ID		Individual Plant Bed Su	PVPV	
12	CH ZAR V	3						. , ,	
	POIL	2			-				
	POCR3							1	
	MYSP ZL							- 1	
	POGRV	2						1	
	PORI						)	2	
	UTMAL	2						_	
	NAFL								
	PUPR 5		-				1	\ \\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	MYVE	-							
	POPE 6 V	2	-					Travel Pattern	
	POZO						St. 10 110 Har		
	CEDE						Plant Bed ID # 01		
	POAM				-31-7-117-11-1				
_	SC SP.					Comments			
	LYSA					Jonninging	•		
	NYTV	2.1				18	RY INTO & REGIO	m. TH	
	SA SP.	71	_			V ×	ERY LITTLE REGIO	2000111	
		-				- )	NSI A FEW MM	SP	
	NULU					_			
	TYLA			-		- 6	ODD PONDWEEDS		
	TYAN		-				,		
	REMINDER INFORI	MATION							
	Substrate: Marl 1 = Sill/Clay 1 = Pre 2 = Sill w/Sand 0 = abs 3 = Sand w/Sill 4 = Hard Clay High Cl 5 = Gravel/Rock 1 = Pre 6 = Sand 0 = abs	ent Organic osent		1 2 3	Canopy: = < 2% = 2-20% = 21-60% = > 60%		0 = as defined Unique 1 = Species suspe letter to 2 = Genus suspected location	ence ID: e number or o denote specific n of a species; aced on attached map	
	Overal N = No F = Flo E = Em	I Surface Cover prooted floating ating, rooted		2	Abundance = < 2% = 2-20% = 21-60% = > 60%		Voucher: 0 = Not Taken 1 = Taken, not varified 2 = Taken, varifieα		

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	A QUATIC ENHA				Y, INC. DATE:
	SITE INFO				SITE COORDINATES
Plant Bed ID: 7	Waterbody Nam		1011		
Bed Size:	LAKE	PI	FASA	NIT	Center of the Bed
	A CONTRACTOR OF THE PARTY OF TH	10	ich sh	10 1	Latitude:
Substrate:	Waterbody ID:		7-		Longitude:
Mari?	Total # of Speci		CF	12	Max. Lakeward Extent of Bed
High Organic?		anopy		ance at Site	
				F:	E: Z Longitude:
	SPECIES INFORMA	NOITA			1
Species Code		QE	Vchr.	Ref. ID	Individual Plant Bed Survey
CH ? AR V			-		
POIL					
POCK3					1 /
MYSP 2					
POGR					] \
PORI					
UTMA					
NAFL					
PUPR 5					
MYVE					
POPE 6					Travel Pattern
POZO					Plant Bed ID # 01
CEDE					
POAM					
SC SP. L	2			X-10-20-1-10-1	Comments:
LYSA					0 6 0
NYTU					SMALL NUMBER PATCH BY
SA SP.					A b
AKVM					MUS
NULUI	2				<u>'</u>
TYLA	-				
TYAN					
REMINDER IN					
1 = Sill/Clay 2 = Sill w/Sand 3 = Sand w/Sill 4 = Hard Clay 5 = Gravel/Rock	Mari 1 = Present 0 = absent High Organic 1 = Present		1 2 3	Canopy: = < 2% = 2-20% = 21-60% = > 60%	QE Code:  0 = as defined  1 = Species suspt 2 = Genus suspected  2 = Unknown  Reference ID:  Unique number or letter to denote specific location of a species; referenced on attached map
( ) ! !	D = absent  Overall Surface Cover N = Nonrooted floating = Floating, rooted E = Emergent S = Submersed		2	Abundanc = < 2% = 2-20% = 21-80% = > 60%	ve: Voucher: 0 = Not Taken 1 = Taken, not varified 2 = Taken, varifier

	Aquatic Vegeta	ation Plant B ana Department						Page of
	ORGANIZATION: A 6					INC.	DATE:	
		SITE INFO					SITE	COORDINATES
	Plant Bed ID:	Waterbody Nar						enter of the Bed
	Bed Size:	LAKE	PU	EASA	NT		Latitude:	
	Substrate: Z	Waterbody ID:					Longitude:	
	Mari?	Total # of Spec	es	10	15 8	5	Max. Lal	keward Extent of Bed
	High Organic?		Canop	Abunda	ance at Site		Latitude:	
		S:	N:		F:	i: 	Longitude:	
2020 2	71,00	PECIES INFORM	ATION					
2020 × 2	Species Code	Abundance	QE	Vehr.	Ref. ID		Individual Pla	int Bed Survey
7 4 0	CH ? AR L	2 2		-			$\circ$	
	POIL V	-12					1	
	MYSP 2V	7	_		-			
	POGR V	2						
	PORI						)	
	UTMAL	2						
		T A	-					
	POPR 5						}	1117
	MYVEL	2						
	POPE 6V	3						Travel Pattern
	POZO						Plant Bed ID # 01	
	CEDE						Tion Sed IS # 01	
	POAM							
	SC SP.				C	omments	:	
1950~Z 250~Z 250~Z	LVSAV2					4.1.	0414	
OFFIX Z	NYTU V3					ALS	CHANNEL	
5001/7	SA SP.							2-0.2201
	1, , , , ,					- SUP	STANCIAL	MYSP REGRANTA
RVI	NULUV 2						J	
	TYLA VZ							
	TYAN REMINDER INFO	DRMATION						
	Substrate: Ma	rl			Запору:		QE Code;	Reference ID:
	2 = Silt w/Sand , 0 =	Present absent			= < 2% = 2-20%		0 = as defined 1 = Species suspe	Unique number or letter to denote specific
	3 = Sand w/Silt 4 = Hard Clay Hig	h Organic			= 21-60% = > 60%		2 = Genus suspected	location of a species;
	5 = Gravel/Rock 1 =	Present absent		•	- 00/6		3 = Unknown	referenced on attached map
					Abundance:		Voucher:	1
		erall Surface Cover Nonrooted floating			= < 2% = 2-20%		0 = Not Taken	
	F≒	Floating, rooted Emergent		3	= 21-60%		1 = Taken, not varified 2 ⊐ Taken, varified	
	The state of the s	Submersed		4	= > 60%			

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	etation Plant B				Page of
	ndiana Departmen				
ORGANIZATION:	A GWATIC ENHA	NCEN	r.EM e	k Surve	Y, INC. DATE: 8/15/06
	SITE INFO		TION		SITE COORDINATES
Plant Bed ID: 8	-5 Waterbody Nar	Children in			Center of the Bed
Bed Size:	LAKE	- PU	RASA	NT	Latitude:
Substrate: 3	Waterbody ID:				Longitude:
Marl?	Total # of Spec	ies		55	Max. Lakeward Extent of Bed
High Organic?		Canop	Abunda	ance at Site	
	S:	N:		F:	E: Longitude:
	SPECIES INFORM	ATION			
Species Cod	de Abundance	QE	Vehr.	Ref. ID	Individual Plant Bed Survey
CH ?AR -					
POILL	13				
POCK3					
MYSP 2					
POGR					
PORIL	3				) 1
UTMA					
NAFL	-				
POPR 5		7-11-1			
MYVE					
POPE 6		-			Travel Pattern
POZO					Plant Bed ID # 01
CEDE					Francisco ID # 01
POAM			-		
SC SP.					Comments:
LYSA		-			and the second s
NYTU					TOOS OF SPINY NAIAD
SA SP.					JOHOF MAILED
ARVM					
NULU					
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REMINDER II	NFORMATION Mari		122		
= Silt/Clay	1 = Present			anopy: = < 2%	QE Code: Reference ID:  0 = as defined Unique number or
= Silt w/Sand , = Sand w/Silt	0 ≈ absent			= 2-20% = 21-60%	1 = Species suspe
= Hard Clay	High Organic			= 21-60%	2 = Genus suspected location of a species; 3 = Unknown referenced on attached map
= Gravel/Rock = Sand	1 = Present 0 = absent				(Side Green on all acried flight
	Overall Surface Cover		1	Abundanc	voucher: 0 = Not Taken
	N = Nonrooted floating		2	= 2-20%	1 = Taken, not varified
	F = Floating, rooted E = Emergent			= 21-60% = > 60%	2 = Taken, varifled
	S = Submersed			200	

	Aquatic Vegetat	ion Plant B	ed D	ata Si	neet			Page of
		na Department						rage or
		VATIC ENHA				Y, INC.	DATE:	
		SITE INFO				-	SITE	COORDINATES
	Plant Bed ID:	Waterbody Nar	ne:					nter of the Bed
	Bed Size: 54.69	LAKE	PU	EASA	NT		Latitude:	iter of the Bed
	Substrate: 3	Waterbody ID:					Longitude:	
	Marl?	Total # of Spec	ies	55				award Futent of D. J.
	High Organic?				ance at Site		Latitude:	eward Extent of Bed
		1	N:		F:	E:	Longitude:	
	SP	ECIES INFORM	ATION				Longitude.	
2	Species Code	Abundance	QE	Vchr.	Ref. ID	7	Individual Plan	at Red Survey
VAANU 2	CH ? AR					1		n neu our vey
TORIN 7	POIL	1 3				1	_	
monte Or C	POCR3					1		1
	MYSP 2					1	5	
	POGR					1		
	PORIV	l				1	)	1
	UTMA					1		
	NAFLY	7				1		
	PUPR 5	1				1	}	2111
	MYVE	1				1		
	POPE 6					1		Travel Pattern
	POZO						Plant Bed ID # 01	
	CEDE						. Mark Ded ID # 01	
	POAM					1		
_	SC SP.				-	Comments:		
	LYSA					1		
	NYTU				78			
	5 A 5P.					1		
	ARVM					1		
	NULU							
	TYLA				- Veryna sowers			
	TYAN		-010					
	REMINDER INFOR	RMATION			anopy:	Allo	QE Code:	
	1 = Silt/Clay 1 = P 2 = Silt w/Sand , 0 = at	resent		1	= < 2%	315	0 = as defined	Reference ID: Unique number or
	3 = Sand w/Silt	osem			= 2-20% = 21-60%		1 = Species suspected 2 = Genus suspected	letter to denote specific location of a species;
	4 = Hard Clay High 5 = Gravel/Rock 1 = Pr	Organic resent		4	= > 60%	:	3 = Unknown	referenced on attached map
	8 = Sand 0 = at				432.00			
		III Surface Cover		1	Abundand = < 2%		Voucher: ) = Not Taken	
		onrooted floating oating, rooted		2	⇒ 2-20%	1	= Taken, not varified	
	E = Er	mergent			= 21-60% = > 60%	2	? = Taken, varified	
	S = St	ibmersed						

ORGANIZATION:	A GWATTC ENHA	WCEN	LENT,	& SURVEY	INC.	DATE:		
	SITE INFO	The state of the s		A JUNIE	10001			
	Waterbody Na		ION				COORDINATES	
Plant Bed ID:	18.39 LAKE	Di	CACA	ArT		Cen	ter of the Bed	
		- 10	KM JP	1 10 1		Latitude:		
Substrate:	Waterbody ID:			~		Longitude:		
Marl?	Total # of Spec	cies	25	ZE		Max. Lake	eward Extent of Bed	
High Organic?			Abund	ance at Site		Latitude:		
	S:	N:		F:	E: 2	Longitude:		
	SPECIES INFORM	ATION						
Species Co		QE	Vehr.	Ref. ID		Individual Plan	t Bed Survey	
CH ? AR						_		
POIL L						1		
POCK 3							)	
MYSP 2						1	1	
POGR						\	1	
PORT						)	1	
UTMA								
NAFL						1		
POPR 5						}	11/2	
MYVE						1		
POPE 6							Travel Pat	
P020		-			a	Plant Bed ID # 01		
CEDE					2	riant bed ib # 01		
POAM								
- 6000	1				Comments:			
LYSAL	1							
NYTU	1	-			1	-4.5		
SA SP.					$\cup$	7.3		
ARVM								
NULU			-					
TYLAVI								
TYAN		_						
REMINDER	INFORMATION							
Substrate: 1 = Sitt/Clay 2 = Sitt w/Sand 3 = Sand w/Sitt 4 = Hard Clay	Marl 1 = Present 0 = absent High Organic		1 2 3	Canopy: 1 = < 2% 2 = 2-20% 3 = 21-60% 4 = > 60%	1	QE Code; 0 = as defined 1 = Species suspe 2 = Genus suspected 3 = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached ma	
5 = Gravel/Rock 6 = Sand	1 = Present 0 = absent							
	Overall Surface Co			Abundance	8 9	/oucher:		
	Overall Surface Cover N = Nonrooted floating F = Floating, rooted E = Emergent S = Submersed		3	= < 2% = 2-20% = 21-60% = > 60%	1	= Not Taken = Taken, not varified ⇒ Taken, varifler		

	Aquatic Vegetati	ion Plant Be na Department				Page of
	ORGANIZATION: A &				UC, DATE:	
		SITE INFOR		3		COORDINATES
	Plant Bed ID: 12	Waterbody Name	e:			nter of the Bed
	Bed Size: 4.94	LAKE	PURAS	ANT	Latitude:	nor of the Dea
	Substrate:	Waterbody ID:			Longitude:	
	Mart?	Total # of Specie	s 55	4 =		eward Extent of Bed
	High Organic?	C	anopyAbur	dance at Site	Latitude:	
		S: N	l:	F: E: 1	3 Longitude:	
	SPI	ECIES INFORMA	TION			
Onn	Species Code	Abundance	QE Vch	Ref. ID	Individual Plan	it Bed Survey
PONA ~ Z CFW47NGL.)	CH ? AR	+			^	
.)	POIL	13		10		
	POCR3.	-				1
	MYSP 2					
•	POGR V	2				.
	PORI					(
	UTMAL					
	NAFL	-			(	
	POPR 5				1	
	MYVE				Givin	Travel Pattern
	POPE 6 V					Traver Fattern
	P020				Plant Bed ID # 01	
	CEDE					
_	POAM	1,				
SEFORE 1	SC SP. L	1		Com	ments:	
254 [	LYSAL	1		-		
	NYTU	3				
	SA SP.					
	ARVM	-	_			
	TYLAV	2				
	TYAN	-	_	-		
	REMINDER INFOR	MATION				
	5 = Gravel/Rock 1 = Pr 6 = Sand 0 = ab Overa N = No F = Fit E = Er	osent Organic esent		Canopy: 1 = < 2% 2 = 2-20% 3 = 21-60% 4 = > 60% Abundance: 1 = < 2% 2 = 2-20% 3 = 21-60% 4 = > 60%	QE Code: 0 = as defined 1 = Species suspt 2 = Genus suspected 3 = Unknown  Voucher: 0 = Not Taken 1 = Taken, not varified 2 = Taken, varified	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map

ORG		iana Department				1110	DATE:	
	į.)		Victoria de la constanta		K JUNYE1	INCI	-	
-		SITE INFO Waterbody Nar		ON			SITE	COORDINATES
Plan	t Bed ID: 13						Cen	ter of the Bed
Bed :	Size: 20	LAKE	- PUR	ASA	N.J		Latitude:	
Subs	strate:	Waterbody ID:					Longitude:	
Mart	7	Total # of Spec	ies	3	5		Max. Lake	ward Extent of Bed
High	Organic?		Canopy	Abunda	ance at Site		Latitude:	
	The second of the second of	S:	N:		F:	E: 3	Longitude:	
		SPECIES INFORM	ATION	A PARTIE TO				
	Species Code	Abundance	QE	Vehr.	Ref. ID		Individual Plan	t Bed Survey
	CH ? AR L	3						
*	POIL L	13					_	
*	POCK3							).
-	MYSP 20	4						
ON _	POGR							
	PORI						)	3
LEAR	UTMAL	3.		-				
	2000000	<b>9.</b> _						
2	NAFL PUPR 5							
-							1	
K -	MYVE						Qi.	Travel Patt
-	POPE 6							
	P020						Plant Bed ID # 01	
	CEDE							
_	POAM							
1 5	C SP.					Comments	:	
LL	VSA V							
N	YTU	V3				V-	EDWATEL 4	<b>X</b>
5	A 5P.					1	DIVITION U	
1,1	RVM							
N	yLU							
_	YLA	VZ						
T	YAN							
Subs	REMINDER IN	ORMATION			Canonii		OE Code:	
1 = S	ill/Clay 1	= Present			Canopy: I = < 2%		QE Code: 0 = as defined	Reference ID: Unique number or
The same of the sa	ilt w/Sand , 0 and w/Silt	= absent			2 = 2-20% 3 = 21-60%		1 = Species suspe 2 = Genus suspected	letter to denote specific location of a species;
		lgh Organic			1 = > 60%		3 = Unknown	referenced on attached may
6 = S		= Present = absent						
	0	vorall Surface Co			Abundance	<b>9</b> :	Voucher:	
		verall Surface Cover = Nonrooted floating			= < 2% ! = 2-20%		0 = Not Taken 1 = Taken, not varified	
	F	= Floating, rooted = Emergent		3	= 21-60%		2 = Taken, varified	
		= Submersed		4	= > 60%			

Aquatic Vege	tation Plant B	ed D	ata Sh	neet	The same of the sa		Pageof	
1	diana Department							
ORGANIZATION:	A QUATIC ENHA	NCEP	LENTA	K SURVE	Y, INC.	DATE: 8/13	5/06	
	SITE INFO						COORDINATES	
Plant Bed ID: 14	Waterbody Nan	ne:						
Bed Size:	LAKE	PU	EASA	N'T		Center of the Bed		
Substrate: 2	Waterbody ID:							
Mari?	Total # of Spec	60	35	22		Longitude:		
High Organic?			-	ance at Site			eward Extent of Bed	
	Control of the last of the las	N:	ynound	F:	E: 2	Latitude:		
	SPECIES INFORM	ATION				Longitude;		
Species Cod		QE	Vchr.	Ref. ID	7	Individual Dia	4 P. 1 C	
CH ZAR P		-1		1101.117	-	Individual Plan	t bed Survey	
POIL	1 2				-	0-		
POCK3					1	1		
MYSF 2				***************************************	1			
POGR					1			
PORI			-		-	)	8	
UTMA					1	کسے		
NAFL	7		1		-	1		
PUPR 5					-	<b>S</b>	JI'M'S	
MYVE		-	_		1	1		
POPE 6					-		Travel Pattern	
POZO			-		-	Diana Dad ID # 04		
CEDE					-	Plant Bed ID # 01	2	
POAM		-			+			
SC SP.	2				Comments	1		
LYSA					-	-		
NYTV					-			
SA SP.			-		-			
ARVM					1			
NULU					4			
TYLA	)				1			
TYAN					1			
REMINDER	NFORMATION	-						
Substrate: 1 = Sill/Clay	Mari 1 = Present			Canopy: 1 = < 2%		QE Code: 0 = as defined	Reference ID:	
2 = Silt w/Sand , 3 = Sand w/Silt	0 = absent			2 = 2-20%		1 = Species suspe	Unique number or letter to denote specific	
	High Organic			3 = 21-60% 4 = > 60%		2 = Genus suspected	location of a species;	
5 = Gravel/Rock	1 = Present			, 2 0076		3 = Unknown	referenced on attached map	
6 = Sand	0 = absent			Ab		V		
	Overall Surface Cover			Abundan 1 = < 2%	ing:	Voucher: 0 = Not Taken		
	N = Nonrooted floating		:	2 = 2-20%		1 = Taken, not varified		
	F = Floating, rooted E = Emergent			3 = 21-60% 4 = > 60%		2 = Taken, variflet		
	S = Submersed		•	, 00/76			_	
	·				4		*	

Aquatic Vegetation						Pageof
State of Indiana	FIIC ENHA				INC. DATE:	2/12/20
11001				x DUVAE	INCIDATE	3/15/06
1+	SITE INFO		ION			SITE COORDINATES
Plant Bed ID: 15						Center of the Bed
Bed Size: 3.14 AL	LAKE	- PU	KASA	N7	Latitude:	
Substrate: 2	Waterbody ID:				Longitude:	
Mari?	Total # of Spec	ies	35		Max	k. Lakeward Extent of Bed
High Organic?		Canop	Apunda	ance at Site	Latitude:	
	S:	N:		F:	Longitude:	
SPE	CIES INFORM	ATION				
Species Code	Abundance	QE	Vehr.	Ref. ID	Individu	ral Plant Bed Survey
CH ? AR	3					and their our yey
POIL	1				0	
POCR3						).
MYSF 2						
POGR -	9	-			)	ı
PORI			-		)	- 1
UTMA						
NAFL V	2		-		1	
PUPR 5	-		-		(	
	-		-		( _	
MYVE					Q!	Travel Pattern
POPE 6						
POZO					Plant Bed ID # 0	1
CEDE						
POAM						
SCSP.					omments:	
LYSA						
NYTU					4.5-	X NLI
SA SP.					7, 5	0 1400
ARVM						
NULU						
TYLA						
TYAN						
REMINDER INFORM	MATION					-
I = Sill/Clay 1 = Pre				Canopy: 1 = < 2%	QE Code; 0 = as defined	Reference ID: Unique number or
R = Silt w/Sand , 0 = abs B = Sand w/Silt	ent			2 = 2-20% 3 = 21-60%	1 = Species suspe	letter to denote specific
= Hard Clay High O				1 = > 60%	2 = Genus suspe 3 = Unknown	cted location of a species; referenced on attached map
= Gravel/Rock 1 = Pre = Sand 0 = abs					***************************************	national on attached map
4 - 400				Abundan	Voucher;	
	Surface Cover prooted floating			= < 2% = 2-20%	0 = Not Taken	E. d
F = Floa	ating, rooted			= 21-80%	1 = Taken, not vari 2 = Taken, variflet	lied
E = Em S = Sub	ergent omersed		4	= > 60%	Section de la constitución de la	
- 500						9

Aquatic Veget							Pageof	
	iana Departmen				<del></del>			
ORGANIZATION: A	ENHA	WCEN	1ENT a	k Surve	EY, INC.	DATE: 8	15/06	
	SITE INFO		TION			SITE	COORDINATES	
Plant Bed ID: 16	Waterbody Na					Cer	nter of the Bed	
Bed Size: 3.34	LAKE	- PU	RASA	NT		Lalllude:		
Substrate: 3	Waterbody ID:					Longitude:		
Mari?	Total # of Spec	cies	35				eward Extent of Bed	
High Organic?		Canop	yAuunda	ance at Site	9	Latitude:	THAIR EXTERN OF DEC	
	s:	N:		F:	E:	Longitude:		
	SPECIES INFORM	ATION			9			
Species Code	Abundance	QE	Vehr.	Ref. ID	]	Individual Plan	it Bed Survey	
CH ZAR V	3				1			
POIL	1 2					~		
POCR3						\	)-	
MYSF 2					]			
POGR					1	1		
PORI					1	)	*	
UTMA					1			
NAFL V	2				1	1		
POPR 5					1	}	2112	
MYVE					1			
POPE 6					1		Travel Pattern	
POZO					1	Plant Bed ID # 01		
CEDE					1			
POAM								
SC SP.					Comments	:		
LYSA					1			
NYTU					1			
SA SP.					1	4.5-8	SW	
AKVM					1	1.5		
NULU								
TYLA								
TYAN								
REMINDER INF Substrate: Ma	ORMATION			Canopy:		QE Code:		
	= Present		1	= < 2%		0 = as defined	Reference ID: Unique number or	
3 = Sand w/Silt	absent			= 2-20% = 21-60%		1 = Species suspected 2 = Genus suspected	letter to denote specific	
	gh Organic Present			= > 60%		3 = Unknown	location of a species; referenced on attached map	
	absent							
Ov	erall Surface Cover		1	Abundan		Voucher; 0 = Not Taken		
N =	Nonrooted floating		2	⇒ 2-20%		1 = Taken, not varified		
	Floating, rooted Emergent			= 21-60% = > 60%		2 ⊐ Taken, variflet		
	Submersed			SAI /0				

Aquatic Vegetati	on Plant Be	d Data	Shee	t		Page of
State of Indian	a Department	of Natur	al Resor	irces		3
ORGANIZATION: A &W	ATIC ENHAN	CEMEN	Tas	URVEY, INC	DATE: 8/1	5/06
	SITE INFOR					COORDINATES
Plant Bed ID: 17	Waterbody Name					nter of the Bed
Bed Size: 5-9	LAKE	PURA	SANT	-		inter of the Bed
Substrate: 2	Waterbody ID:				Latitude:	
Marl?	Total # of Species	· Co	5		Longitude:	
High Organic?		anopyAu		ot Olto		eward Extent of Bed
4 4	S: ) N		F:	E:	Latitude:	
SPI	ECIES INFORMA	TION			Longitude:	
Species Code	Abundance		ehr. Re	4.10		
CH ? AR	2	QE V	enr. R	ef. ID	Individual Pla	nt Bed Survey
POIL L	1 3		_		$\sim$	
POCR3	1	-				
MYSP 2	+	_	-			
POGR		-				
PORI					)	9
	-					1
UTMA						
NAFL					1	
POPR 5 V					1	
MYVE					(a)	
POPE 6-	1				The state of the s	Travel Pattern
POZO					Plant Bed ID # 01	
CEDE						
POAM						
SCSP.				Comme	ints:	
LYSA						
NYTU			-			
SA SP.					4.5-8 N	LEST FND
ARVM		_	_		1.7 0	
NULU						
TYLA						
TYAN						
REMINDER INFOR	MATION					
Substrate: Marl = Silt/Clay 1 = Pr = Silt w/Sand 0 = at = Sand w/Silt = Hard Clay High = Gravel/Rock 1 = Pr = Sand 0 = ab	organic esent		Cano 1 = < ; 2 = 2-; 3 = 21 4 = > (	2% 20% -60%	QE Code: 0 = as defined 1 = Species suspe 2 = Genus suspected 3 = Unknown	Reference ID: Unique number or letter to denote specific location of a species; referenced on attached map
- 5ano U = 80	<b>४</b> सार्थ		Alt	undance:	Voucher:	
N = No F = Flo E = En	Il Surface Cover onrooted floating pating, rooted nergent abmersed		1 = < 2 2 = 2-2 3 = 21 4 = > 6	% 0% 80%	0 = Not Taken 1 = Taken, not varified 2 = Taken, varified	

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	tation Plant B						Page of			
	diana Department									
ORGANIZATION:	A QUATIC ENHA	NCEM	IENT 2	k Surve	Y, INC.	DATE: 8/15	5/06			
	SITE INFO		ION			SITE COORDINATES				
Plant Bed ID: 18	Waterbody Nan					Cer	nter of the Bed			
Bed Size: 6-9	3 LAKE	- PU	EASA	NT		Latitude:				
Substrate: 2	Waterbody ID:					Longitude:				
Mari?	Total # of Speci	ies <	15				eward Extent of Bed			
High Organic?		Canopy	Avund	ance at Site	,	Latitude:	STATE EXIGIN OF DOG			
	S:	N:		F:	E:	Longitude:				
	SPECIES INFORM	ATION								
Species Cod	e Abundance	QE	Vchr.	Ref. ID		Individual Plan	at Bed Survey			
CH ZAR	3				]	2				
POIL	12					_				
POCK3										
MYSF 2					1	<u></u>				
POGR					1	\	g			
PORI				<del>,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</del>	1	)	1			
UTMA					1					
NAFL	22				1	1				
PUPR 5					1	}	2111			
MYVE					1		Tank			
POPE 6			-		-		Travel Pattern			
POZO					-	Plant Bed ID # 01				
CEDE					1	Plant beg (D # 0)				
POAM					1					
SC SP.					Comments	:				
LYSA										
NYTU					-	Cuati				
5A 5P.					1	8-13 WE	5)			
ARVM					1					
NULU					1					
TYLA										
TYAN					1					
REMINDER IN	FORMATION									
I = Sitt/Clay 2 = Sitt w/Sand ,	Mari 1 = Present 0 = absent			Canopy: 1 = < 2% 2 = 2-20%		QE Code: 0 = as defined 1 = Species suspe	Reference ID: Unique number or letter to denote specific			
= Gravel/Rock	High Organic 1 = Present			3 = 21-60% 1 = > 60%		2 = Genus suspected 3 = Unknown	location of a species; referenced on attached map			
	0 = absent Overall Surface Cover N = Nonrooted floating		2	Abundana = < 2% = 2-20%		Voucher; 0 = Not Taken 1 = Taken, not varified				
1	F = Floating, rooted E = Emergent S = Submersed			= 21-80% = > 60%		2 ⊐ Taken, variflet				

Aquatic Veg	etation Plant B	ed D	ata Si	neet	-		Pageof			
State of I	ndiana Department	of Na	tural R	esources						
ORGANIZATION:	A QUATIC ENHA	NCEP	LENTA	k SURVE	Y, INC.	DATE: 8/15/6	76			
	SITE INFO	RMAT	ION			SITE COORDINATES				
Plant Bed ID:						Center of the Bed				
Bed Size:	LAKE	. PL	EASA	NT		Latitude:	iter of the bed			
Substrate: 2	Waterbody ID:		10-11-11			Lanuae: Longitude:				
Mart?	Total # of Spec	es	15	5			eward Extent of Bed			
High Organic?			VApunda	ance at Site	9	Latitude:	ward Extent of Bed			
	S: -	N:		F:	E:	Longitude:				
	SPECIES INFORM	ATION		***************************************		Tanada.				
Species Co	de Abundance	QE	Vchr.	Ref. ID	7	Individual Plan	t Red Survey			
CH ? AR	2				1		t neu survey			
POIL	. 1			12.	1	_				
POCK3										
MYSF 2					1	<u>_</u>				
POGR					1	1				
PORI				Venus Inno	1	)	8			
UTMA					1					
NAFL					1	1				
POPR 5					1	}	7112			
MYVE					1					
POPE 6					1		Travel Pattern			
POZO					1	Plant Bed ID # 01				
CEDE					1					
POAM					1					
SCSP.					Comments	1	***************************************			
LVSA					1	0				
NYTU					1	13-18 WES	51			
SA SP.						13				
ARVM					1					
NULU					1					
TYLA					]					
TYAN	BEODMATION					Charles of the Control of the Contro				
Substrate:	NFORMATION Mari			Canopy:		QE Code:	Potence in			
1 = Silt/Clay 2 = Silt w/Sand ,	1 = Present			= < 2%		0 = as defined	Reference ID: Unique number or			
3 = Sand w/Silt	0 = absent			2 = 2-20% 3 = 21-60%		1 = Species susp∈ 2 = Genus suspected	letter to denote specific			
l = Hard Clay i = Gravel/Rock	High Organic 1 = Present			= > 60%		3 = Unknown	location of a species; referenced on attached map			
= Sand	0 = absent									
	Overall Surface Cover		4	Abundan = < 2%		Voucher:				
	N = Nonrooted floating			= 2-20%		0 = Not Taken 1 = Taken, not varified				
	F = Floating, rooted E = Emergent			= 21-80%		2 = Taken, varifler				
	S = Submersed		4	= > 60%						
							(.0			

Aquatic Veget	ation Plant B lana Department				Pageof_
	ENHA				, INC. DATE: 8/15/06
	SITE INFO			A JUNTE	
Plant Bed ID: 20	Waterbody Nan		ION		SITE COORDINATES
	LAKE		CACA	ANT	Center of the Bed
Bed Size:	Children of the Control	- ru	KH JH	N I	Latitude:
Substrate: 2	Waterbody ID:		2 ^		Longitude:
Mari?	Total # of Spec	ies	35		Max. Lakeward Extent of Bed
High Organic?	A CONTRACTOR OF THE PROPERTY OF THE PARTY OF	1000		ance at Site	Latitude:
	S: -	N:		F:	E: Longitude:
	SPECIES INFORM	ATION			
Species Code	Abundance	QE	Vehr.	Ref. ID	Individual Plant Bed Survey
CH ZARV	12				
POIL	1			14	
POCK3					
MYSP 2					
POGR					\
PORI					)
UTMA		Water I was			
NAFL					
PUPR 5					
MYVE					
POPE 6			-		Travel Patter
POZO					
CEDE					Plant Bed ID # 01
POAM					
SCSP.					Comments:
LYSA			-		Johnnands.
			-		
NYTU					100 01
SA SP.					18-26
ARVM					
NULU					
TYAN					
REMINDER INF	ORMATION			1	
ubstrate: M	arl			Canopy:	QE Code; Reference ID;
= Sill w/Sand , 0	= Present = absent			= < 2% = 2-20%	0 = as defined Unique number or
= Sand w/Sill = Hard Clay HI	ab Osanul-		3	= 21-60%	2 = Genus suspected location of a species;
= Gravel/Rock 1 =	gh Organic ≈ Present		4	= > 60%	3 = Unknown referenced on attached map
= Sand 0 =	= absent			A1	
	verall Surface Cover		1	Abundance = < 2%	voucher: 0 = Not Taken
	Nonrooted floating Floating, rooted			= 2-20%	1 = Taken, not varified
E =	= Emergent			= 21-80% = > 60%	2 = Taken, varifier
S =	Submersed				24

	Aquatic Vegetat	ion Plant B	ed D	ata Si	neet			Page of			
		na Department						Page of			
	ORGANIZATION: A QU	JAMC ENHA	NCEM	ENT	SURVE	Y.INC.	DATE: 8/2/1	06			
		SITE INFO			. 50.111	1) (100)	1 -				
	Plant Bed ID: CH	Waterbody Nan		1014			SITE COORDINATES				
	Bed Size: 515	LAKE	PLA	FASA	NT		Center of the Bed				
	Substrate: 2	Waterbody ID:	101	911 371	101		Latitude:				
	Mari?			115	9E		Longitude:				
	High Organic?	Total # of Speci					Max. Lake	eward Extent of Bed			
	Ingii Organici		zanopy N:		ance at Site	E: 3	Latitude:				
	SP	ECIES INFORMA	ATION			<u></u>	Longitude:				
	Species Code	Abundance	QE	Value	D. 6 ID	1					
P1	CH ? AR V	3	ŲC.	Vehr.	Ref. ID	1	Individual Plan	t Bed Survey			
AMVI	POIL V	3	-		+		~				
	POCK3					1					
	MYSP 2L	1				1					
	POGR V	3				1					
	PORI						)	1			
The same of the sa	UTMAV	2				1					
	NAFL	3	71200								
	POPR 5	1	2202				(				
*	MYVE	-					1				
	POPE 6V	2	-					Travel Pattern			
	POZOV	2									
	CEDE	-		-		B	Plant Bed ID # 01				
	POAM	3									
_	SCSP. V	2		-		Comments:					
	LYSA	1	-								
	NYTU	1 2				<	SECCHI	7'			
	SA SP. V	3 2		-			) ~ · · · · · · · · · · · · · · · · · ·	ı			
	ARVM	-	-	-		a	SECCHI OVOY a WIM	ud y			
11 /7	NULUV	2	-								
CHUZ	TYLAL	2	-	-		VLKY LI	IN MADE LAND	S BED - MOSTER SHALLOW			
1815V2	TYAN					-DARK &	WWOY CONDIT	LONS - NO MYVE SEEN			
1111	REMINDER INFOR	MATION						) B-IV			
/	1 = Sill/Clay 1 = P	resent			anopy: = < 2%		QE Code: 0 = as defined	Reference ID:			
	2 = Silt w/Sand , 0 = at 3 = Sand w/Silt	osent			= 2-20%		I = Species susp∈	Unique number or letter to denote specific			
t V	4 = Hard Clay High	Organic			= 21-60% = > 60%	3	2 = Genus suspected 3 = Unknown	location of a species; referenced on attached map			
EX SP. 4	5 = Gravel/Rock 1 = Pr 6 = Sand 0 = ab						and the second s	anached map			
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ORGANIZATION: A &	IAMIC ENHA	NCEN	LENT	& SURVE	Y, INC.	DATE: 8 3 C	06			
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# Appendix C Tier II Data Sheets 8/06

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APPENDIX A

Submersed Aquatic Plant Survey Form

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	2-7	7/	12	11-19	73	3	1		100000000000000000000000000000000000000			***********	(1) H-1 - (1)	40 = 11111
15	.70	- //10	12	1 60	100									

## Appendix D, 2007 Season IDNR Vegetation Permit Application

## APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03)

Approved State Board of Accounts 1987

Whole Lake X Multiple Treatment Areas

Check type of permit

FOF	OFFICE US	SE ONLY
Licen	se No	
Date I	ssued	
Lake (	County	

Return to: Page 1 of 4 DEPARTMENT OF NATURAL RESOURCES Division of Fish and Wildlife Commercial License Clerk 402 West Washington Street, Room W273 Indianapolis, IN 46204

INSTRUCTIONS: Please print or type information		FEE: \$5.00
Applicant's Name	Lake Assoc, Name	
Lake Pleasant Cottage Owners Assn.		easant Cottage Owners Assn.
55 Ln 101 Lake Plea	Phone Number	
City and State	260-833-4026	
Fremont, IN	ZIP Code	
Certified Applicator (if applicable)	Company or Inc. Name	46737 Certification Number
Rural Route or Street		
Notife of Street	Phone Number	
City and State		700
		ZIP Code
Lake (One application per lake)	Nearest Town	
Lake Pleasant	Orland	Caunty
Does water flow into a water supply	Onang	Steuben
		Yes X No
Please complete one section for EACH treatment area. Atta	ich lake map showing treatment are	ea and denote location of any water supply intak
P.C. P.C.A. C.		50,000,000,000
ond dores to be	W's N 41 deg 45' 15.8" W 85	deg 4' 58.3"
olled 20 Proposed shoreline treatment	length (ft) ppen lk Perper	ndicular distance from shoreline (ft) varies
mum Depth of freatment (ft) 15 Expected date(s) of treatment		Tan So
Freatment method: X Chemical Physical	Biological Control	1
		Mechanical
Based on treatment method, describe chemical used, method of ph	ysical or mechanical control and dispo	isal area, or the species and stocking
ate for biological control. Navigate 2-4-D		SUMPLEMENT OF A PROCESSION OF THE SUMPLEMENT OF
Plant survey method: Rake X Visual Other	r (specify)	
Aquatic Plant Name	Check if Target	SERVICE STREET, SERVICE 1 NO.
Addage Flant Hante	Species	Relative Abundance
Curly-leaf pondweed		% of Community
The second second		5%
Eurasian watermilfoil	X	50%
Illinois pw		10
Flatstem pw		5
Whitestern pw		10
Chara		20
		20

#### APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT

State Form 26727 (R / 11-03) Approved State Board of Accounts 1987
Whole Lake X Multiple Treatment Areas

FOR OFFICE USE ONLY License No Date Issued

Return to: Page 2 of 4
DEPARTMENT OF NATURAL RESOURCES Division of Fish and Wildlife Commercial License Clerk 402 West Washington Street, Room W273 Indianapolis, IN 46204

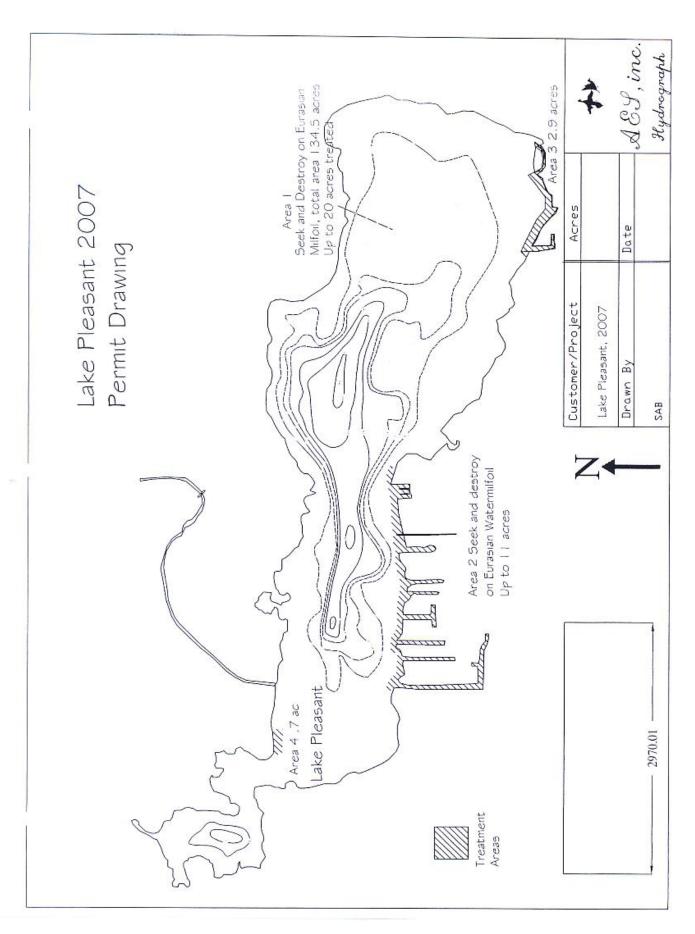
Check Type of permit INSTRUCTIONS: Please print or type information	Lake County	FEE: \$5.00	
Applicant's Name	Lake Assoc. Name		
	Lake Pleasant Cottage Owners Assn.		
	2000 VICE VICE	Phone Number	
City and State	and the second s	ZIP Code	
Certified Applicator (if applicable)	Company or Inc. Name	Certification Number	
Rurat Route or Street		Phone Number	
City and State		ZIP Code	
_ake (One application per lake)	Nearest Town	County	
Lake Pleasant	Orland	Steuben	
Does water flow into a water supply		Yes X No	
Please complete one section for EACH treatment area. Attach	lake map showing treatment	area and denote location of any water supply intake.	
Treatment Area # 2 LAT/LONG or UTM's Total acres to be  *olled 11 Proposed shareline treatment le	s N 41 deg 45' 20.2" W ngth (ft) shoreline/chan Per	85 deg 6" 3.8"  pendicular distance from shoreline (ft) varies	
Treatment (ft) 5.5 Expected date(s) of treatment(s)	) 5/15/07, 7/8/07		
Treatment method X Chemical Physical	Biological Control	Mechanical	
Based on treatment method, describe chemical used, method of physicate for biological control, Navigate 2-4-D  Plant survey method: Rake X Visual Other (	specify)  Check if Target	isposal area, or the species and stocking  Relative Abundance	
Aqualic Flancivanie	Species	% of Community	
Curly-leaf pondweed		5%	
Eurasian watermilfoil	X	50%	
Illinois pw		10	
Flatstern pw		5	
whorled watermilfoil		10	
Chara		20	

# APPLICATION FOR AQUATIC VEGETATION CONTROL PERMIT State Form 26727 (R / 11-03) Approved State Board of Accounts 1987 Whole Lake X Multiple Treatment Areas Check type of permit VSTRUCTIONS: Please print or type information

FOR OFFICE	E USE ONLY
License No	
Date Issued	1117
Lake County	77.00

Return to: Page 3 of 4
DEPARTMENT OF NATURAL RESOURCES
Division of Fish and Wildlife
Commercial License Clerk
402 West Washington Street, Room W273
Indianapolis, IN 46204

				Lake County		
INSTRUCTIONS: Please print or type information					FEE: \$5.00	
Applicant's Name		Lake Assoc. Name  Lake Pleasant Cottage Owners Assn.				
					Phone Number	
City and State					ZIP Code	
Certified Applicator (if applicable)				Company or Inc. Name	Certification Number	
Rural Route or Street					Phone Number	
City and State					ZIP Code	
Lake (One application per lake)  Lake Pleasant				Nearest Town Orland	County	
Does water flow into a water supply					Yes X No	
Please complete one	section fo	or EACH treatme	nt area. Attach	lake map showing treatme	nt area and denote location of any water supply intake.	
Treatment Area #						
Total acres to be folled imum Depth of	2.9	Proposed shore	line treatment len	gth (ft) shoreline/chan F	Perpendicular distance from shoreline (ft) 60 ft	
Treatment (ft)	5.5	Expected date(s	s) of treatment(s)	5/15/07, 7/8/07		
Treatment method:	X Chem	ical Physic	al	Biological Control	Mechanical	
Based on treatment met rate for biological contro		be chemical used igate 2-4-D	, method of physic	cal or mechanical control and	i disposal area, or the species and stocking	
Plant survey method:	Rake	X Visual	Other (s	pecify)		
	Aquatic	Plant Name		Check if Target Species	Relative Abundance % of Community	
	Curly-lea	af pondweed			5%	
Eurasian watermilfoil				X	50%	
Illinois pw			CONTRACTOR OF STREET		10	
Flatstem pw					5	
Whorled watermilfoil					10	
Chara					20	
	ALL A 1957					
4						



### **Appendix E Additional Resources**

### Calendar of lake management, conferences, classes, and workshops

Lake Pleasant residents can attend the following events to learn more about lake management and converse with other lake associations and lake management professionals regarding plant management programs.

#### 2007

**March 30th and 31st**, Indiana Lakes Management Society conference. Lake Monroe, Bloomington Indiana. More information is available at www.indianalakes.org or by calling 260-665-8226

**April 28**, Kinderhook Michigan, Lk George Association/ILMS sponsored Hydrilla workshop. More information is available at www.indianalakes.org or by calling 260-665-8226

**October**, Several local workshops offered by the Indiana Lakes Management Society, dates to be announced. More information is available at www.indianalakes.org or by calling 260-665-8226

#### Sources of local, state, and federal funding and information

Funding assistance for watershed wetland and grassland restoration is available from:

Ducks Unlimited Great Lakes/Atlantic Regional Office 331 Metty Drive, Suite #4 Ann Arbor, MI 48103 734-623-2000

Pheasants Forever, Northeast Indiana Chapter Habitat Officer, Dave Hurley 1003 County Road 8 Corunna, IN 46730

Other help for watershed improvements can be obtained from:

Indiana Department of Natural Resources Division of Fish and Wildlife Room W265 402 W. Washington Street Indianapolis, IN 46204-2739 317-233-5468 USDA Natural Resources Conservation Service 1220 N 200W Angola, IN 46703

Wood-Land-Lakes RC&D Peachtree Plaza 200 1220 N 200 W -Ste J Angola, IN 46703 260-665-3211, Ext. 5